

## The Headstamp Trail

### An Assessment of Small-calibre Ammunition Found in Libya

by N.R. Jenzen-Jones



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## Abbreviations and acronyms

ACP	Automatic Colt pistol
AK	Avtomat Kalashnikova ('Kalashnikov Automatic Rifle')
AKM	Avtomat Kalashnikova Modernizirovanny ('Kalashnikov Automatic Rifle, Modernised')
AKS	Avtomat Kalashnikova skladnoy ('Kalashnikov Automatic Rifle, Folding')
AP	Armour piercing
API	Armour-piercing incendiary
API-T	Armour-piercing incendiary tracer
BMG	Browning machine gun
BZT	Broneboyno Zazhigatelno Trassiruyushchiy ('armour-piercing incendiary tracer')
CCS	Copper-clad steel
CMS	Counter-Measure Sniper
CRISAT	Collaborative Research Into Small Arms Technology
DShKM	Degtyareva-Shpagina Krupnokalibernyy ('Degtyareva-Shpagina large calibre')
FAL	Fusil Automatique Léger ('Light Automatic Rifle')
FMJ	Full metal jacket
FN	Fabrique Nationale d'Herstal ('National Factory, Herstal')
GMCS	Gilding metal-clad steel
HEI	High-explosive incendiary
HE-T	High-explosive tracer
HRW	Human Rights Watch
KPV	Krupnokalibernyy Pulemet Vladimirova ('Vladimirova largecalibre machine gun')
LYD	Libyan dinar
MAG	Mitrailleuse d'Appui Général ('General-purpose machine gun')



MANPADS	Man-portable air defence systems
MDZ	Mnogovennogo Deystviya Zazhigatelnyy (‘instantaneous incendiary’; HEI)
NATO	North Atlantic Treaty Organization
NGO	Non-governmental organization
NSVT	Nikitina-Sokolova-Volkova Tankovyy
PK	Pulemet Kalashnikova (‘Kalashnikov machine gun’)
PKB	Pulemet Kalashnikova na Bronetransporternyy (‘Kalashnikov machine gun for armoured personnel carriers’; variant fitted with spade grips and butterfly trigger for use on armoured fighting vehicles)
PKM	Pulemet Kalashnikova Modernizirovanny (‘Modernized Kalashnikov machine gun’)
PKMT	Pulemet Kalashnikova Modernizirovanny Tankovyy (‘Modernized Kalashnikov tank machine gun’; vehicle mounted, solenoid-fired variant of the PKM machine gun).
PKT	Pulemet Kalashnikova Tankovyy (‘Kalashnikov tank machine gun’; vehicle mounted, solenoid-fired variant of the PK machine gun).
POF	Pakistan Ordnance Factories
PSL	Pușcă Semiautomată cu Lunetă (‘Semi-automatic sniper rifle’)
RPD	Ruchnoy Pulemyot Degtyaryova (‘Degtyarev light machine gun’)
SALW	Small Arms and Light Weapons
S&W	Smith and Wesson
SBS	Santa Barbara Sistemas
TCW	Tula Cartridge Works
USD	United States dollar
USSR	Union of Soviet Socialist Republics
ZPU	Zenitnaya Pulemetnaya Ustanovka (‘anti-aircraft machine gun system’)

## About the author

N.R. Jenzen-Jones is a military arms and munitions specialist and security analyst who focuses on current and recent conflicts. He consults on an independent basis, offering technical expertise and analysis to a range of government and non-government entities. He has written extensively on a variety of small arms and small arms ammunition issues, as well as providing technical analyses of incendiary weapons, cluster munitions, and arms proliferation. Other research fields include counter-piracy, counter-narcotics, and the exploitation of technical intelligence. He is a certified armourer and ammunition collector.

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# Introduction

Seven months of fighting, coupled with a security vacuum in the months that followed, have led to the wide dispersal of Libya's vast arsenal. Arms and ammunition have proliferated within the country, and in some cases have spilt over into neighbouring countries (Chivers, 2013). While journalists and analysts have been documenting weapons proliferation in Libya since the early days of the conflict, these studies have tended to focus on the larger systems, particularly Man Portable Air Defence Systems (MANPADS) (Chivers, 2011a). There has been comparatively less scrutiny of small-calibre ammunition, even though the availability of ammunition for arms such as assault rifles and machine guns may pose a broader and longer-lasting challenge.

This *Working Paper* provides, in a single document, an analysis of 65 different small-calibre (less than 20 mm) cartridge headstamps documented in Libya (see Annexe 1). Sources include information and photographs that have been gathered by numerous journalists, experts, and organizations since early 2011.<sup>1</sup> Source material can be categorized as follows: photos of cartridge headstamps, photos of cartridges, photos of ammunition packaging, and shipping documents pertaining to small arms ammunition transfers. Most photographs used for this report were taken in Tripoli, during the first five months of 2012, with additional photos originating from Ajdabiya, Benghazi, and Misrata. This baseline, which will be updated as more information becomes available,<sup>2</sup> is meant to serve as a tool for governments, NGOs, and other actors involved in understanding and stemming the illicit flow of small arms ammunition in the region.

While the report uses available documentation to provide a sense of the general availability of each type of ammunition, it must be stressed that quantities of ammunition are difficult to measure in any context. In some cases, the ammunition boxes and shipping documents photographed represent millions of rounds. In other instances, journalists photographed the

ammunition carried by individual gunmen. A number of other factors limit the scope of this report. The photographs reviewed are primarily of ammunition held by civilians or non-state actors such as armed brigades. Remaining government stocks, in particular, are still difficult to assess in an accurate manner, although shipping documents dating from before the 2011 conflict provide a sense of their nature. Information for this report was gathered primarily from the larger cities as information on the availability or stockpiles of small arms ammunition in rural areas is limited.

Recognizing these limitations, the main findings of this publication include the following:

- The identified cartridges were manufactured predominantly in factories located in Belgium, China, and former Eastern Bloc countries.
- Among the cartridges assessed for this study, the headstamps suggest regular procurement of ammunition over the past 40 years. However, only two of the identified headstamps indicate a production date from the 1992–2003 period of the UN Security Council’s arms embargo on Libya.
- Cartridges in Eastern Bloc calibres are the most common and widely available; this finding is supported by photographic evidence and their relatively low prices on the local black markets. NATO-calibre rounds are typically scarcer and often associated with those small arms that are considered more prestigious. These factors have resulted in NATO-calibre ammunition being sold at artificially inflated prices.
- Handgun ammunition is uniformly more expensive and less available than ammunition for long guns. Handgun ammunition is highly sought after because buyers have begun opting for concealable firearms over the commonly available Kalashnikov variants and Fabrique Nationale d’Herstal (FN Herstal) Fusil Automatique Léger (FAL) rifles of the conflict period.

This report is divided into two sections. The first section examines the general availability of the main types of ammunition discussed, based on ammunition headstamp data, black market prices, and other information. The second section provides technical background and photographic illustrations of the ammunition observed. Annexe 1 provides a summary table of the 65 identified headstamps, including headstamp diagrams when available.

## General availability of small-calibre ammunition

Based on available information, this report identifies 65 unique headstamps of small-calibre ammunition seen in Libya (see Annexe 1). These include 7.62 × 39 mm cartridges (17 headstamps identified), 7.62 × 54R (rimmed) mm cartridges (6 headstamps), 7.62 × 51 mm cartridges (13 headstamps), 12.7 × 108 mm cartridges (5 headstamps), 14.5 × 114 mm cartridges (7 headstamps), 5.56 × 45 mm cartridges (2 headstamps), 9 × 19 mm cartridges (4 headstamps), and headstamps of cartridges of other calibres (11 headstamps).

The information available makes it possible to establish a basic profile of ammunition in Libya based on calibre, year and country of manufacture. Overall, the evidence points to large quantities of 7.62 × 39 mm, 7.62 × 54R mm, 12.7 × 108 mm, and 14.5 × 114 mm ammunition, from the former Eastern bloc, as well as 7.62 × 51 mm NATO ammunition. Several sources in Libya have confirmed that ammunition in these calibres is readily available in street markets and through arms dealers.<sup>3</sup> The most frequently identified manufacturing countries are the Russian Federation (or, prior to 1991, the Soviet Union) (15 headstamps), China (8), Romania (5), and other countries of the former Eastern Bloc (7). In addition, a number of identified cartridges were produced in Belgium (18).<sup>4</sup>

Overall, the years of production ranged from 1936 to 2009, with almost ninety per cent of ammunition identified having been manufactured in the past forty years. This indicates regular purchases of ammunition over time, probably in excess of domestic requirements. Most of the identified 7.62 × 39 mm cartridges—for use with assault rifles and light machine guns—were manufactured in China and the Russian Federation (or former Soviet Union), some as recently as between 2005 and 2008. The 7.62 × 51 mm NATO calibre rounds documented were produced predominantly in Belgium from the late sixties to the early eighties.

Interestingly, only two identified types of round were produced between 1992 and 2003, a period during which Libya was under a UN arms embargo (SIPRI, 2012). They were the 7.62 × 39 mm ammunition manufactured in 1994 by Factory 352 in China and the 5.56 × 45 mm ammunition produced in 2002 by Santa Barbara Sistemas in Spain (see Annexe 1). The fact that so few of the identified rounds were produced during this 11-year period stands out; for the other decades after 1970, this report identifies ammunition that was produced for almost all years, with the exception of a three-year gap in the mid-eighties. This finding, however, does not rule out the possibility that these rounds were transferred to Libya after the arms embargo, or that transfers of older ammunition occurred during the embargo.

Black market prices for small arms ammunition in Libya provide another measure of their availability, as well as a perceived value of the weapons chambered for the ammunition in question. For example, while 5.56 × 45 mm ammunition is typically less expensive than 7.62 × 51 mm ammunition in countries with regular commercial access to both cartridges, the price of a 5.56 × 45 mm round in Tripoli in early February 2012 was more than sixteen times that of a 7.62 × 51 mm cartridge. As at February 2012, indicative pricing for particular ammunition types in Libya was as follows:<sup>5</sup>

- 7.62 × 39 mm – LYD 0.25 per cartridge (USD 0.20)
- 7.62 × 54R mm – LYD 0.50 per cartridge (USD 0.40)
- 7.62 × 51 mm – LYD 0.50 per cartridge (USD 0.40)
- 9 × 19 mm – LYD 8 per cartridge (USD 6.10)
- 5.56 × 45 mm – LYD 8+ per cartridge (USD 6.10+)

The 9 × 19 mm and 5.56 × 45 mm cartridges, in particular, are grossly overvalued in Libya. 9 × 19 mm cartridges were priced at approximately twenty times the price of comparable ammunition on the United States civilian market, suggesting that there was a high demand for handguns.<sup>6</sup> The 5.56 × 45 mm cartridge is very difficult to source in Libya and, when available, it appeared to be priced at a minimum of sixteen times the price of a comparable cartridge on the US civilian market (with reports indicating that the price could be as high as LYD 15, or USD 11.50, per cartridge). Not only are 5.56 × 45 mm cartridges very scarce, they are sought after for use in arms that are locally

regarded as 'prestigious',<sup>7</sup> such as the FN Herstal F2000 and Heckler & Koch G36V assault rifles.

Multiple sources in Tripoli have confirmed that as at April 2012, the price of 7.62 × 39 mm and 7.62 × 51 mm cartridges has spiked to LYD 1 or USD 0.80 per cartridge. That is approximately three times the price of a 7.62 × 39 mm cartridge in the US civilian market.<sup>8</sup>



# Technical characteristics of the identified ammunition

## 7.62 × 39 mm ammunition

This report identifies 17 headstamps of 7.62 × 39 mm ammunition, making it the most commonly documented round in Libya. The 7.62 × 39 mm M1943<sup>9</sup> and similar cartridges were used in conjunction with a diversity of assault rifles available in Libya, ranging from early-model Soviet AKMs (as well as copies from throughout the former Eastern Bloc) and Chinese Type 56s, right through to modern Russian AK-103-2 and Bulgarian Arsenal AR-SF rifles (Jenzen-Jones, 2012). These identified cartridges were manufactured in China, the Russian Federation, and a number of former Eastern Bloc countries, and are likely to have come from several other sources as well. The most common cartridge type appears to be the PS ball cartridge (57-N-231;<sup>10</sup> or 'Type 56 Ball' in Chinese nomenclature), generally featuring gilding metal-clad steel (GMCS) jacketed projectiles, with a mild steel core and lead tip filler. The cases have been a typical mix of copper-clad steel (CCS, commonly and incorrectly referred to as 'copper-washed') and lacquered steel (Labbett, 2001).

Photo 1 **7.62 × 39 mm blank produced at Factory 352 (China), 2007.**<sup>11</sup>



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Photo 2 **Factory 352 7.62 × 39 mm cartridge packaging (20 rounds).**<sup>12</sup>



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All examples of the Chinese ammunition with verifiable headstamps were produced at State Factory 352 with some of these samples coming from large packaged lots of ammunition. Samples were seen from 1994, 2007, and 2008. One cartridge from Factory 31 featured an olive-lacquered steel case. The majority of the identified Chinese ammunition was of the typical Chinese military ball type (see description above), with the exception of a Factory 352 blank cartridge that was sighted in Tripoli (Photo 1). One 20-cartridge box of Factory 352 ammunition did not include the year of manufacture in the headstamp, and neither did the blank cartridge.

The presence of USSR-/Russian-manufactured 7.62 × 39 mm ammunition in Libya is well documented. A shipping document retrieved by Human Rights Watch (HRW)<sup>13</sup> indicates that a shipment of more than one million 7.62 × 39 mm cartridges produced in 2005 was delivered to Libya within the same year (see Annexe 2). This export was conducted under the auspices of the Russian Federation's state export company, Rosoboronexport JSC. Photographic evidence also shows boxes of 2005-produced ammunition that most likely comes from Tula Cartridge Works (TCW) and/or Ulyanovsk Machinery Plant State Production Association (Ulyanovsk MP),<sup>14</sup> which may have been part of this shipment (Photo 6). Spent casings from 2005-produced cartridges

Photo 3 7.62 × 39 mm from Ulyanovsk Machinery Plant (Russian Federation), 2005.<sup>15</sup>



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Photo 4 7.62 × 39 mm from Tula Cartridge Works (Russian Federation), 2005.<sup>16</sup>



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produced by both TCW and Ulyanovsk MP were also found at the site of a massacre allegedly perpetrated by Gaddafi's 32nd Brigade in Salahaddin.<sup>17</sup>

Although most photos of outer packaging of 7.62 × 39 mm cartridges indicate recent years of production, other images illustrate the presence of older ammunition produced in former USSR state factories. Headstamps include 1973 production in Lugansk (in what is now Ukraine), and 1974 manufacture in both Frunze (now Bishkek, Kyrgyzstan) and at Tula Cartridge Works. Examples of ammunition from former-Warsaw Pact countries include 1964 and 1983 Romanian cartridges with no factory markings, that were very likely produced at S.C. Uzina Mecanica Sadu S.A. (Uzina Mecanica Sadu), a 1981 cartridge produced by Sellier & Bellot in Czechoslovakia (now the Czech Republic) (Photo 5), a 1984 cartridge from Mátravidéki Fémhûvek in Sirok, Hungary, and a 1982 cartridge from Prvi Partizan, in Uzice, Yugoslavia (now Serbia).



Photo 5 7.62 × 39 mm cartridge produced by Sellier & Bellot in Czechoslovakia, 1981.<sup>18</sup>

Copyright: Damien Spleeters



Photo 6 Outer packaging for 2005 Russian-produced 7.62 × 39 mm. Markings are similar to those described in the shipping documents retrieved by Human Rights Watch (Annexe 2).<sup>19</sup>

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## 7.62 × 54R mm ammunition

7.62 × 54R mm cartridges also appear to be particularly prevalent in Libya. This is not surprising given the significant number of weapon systems chambered for this calibre. PKM general-purpose machine guns (and the PK, PKT, PKMT,<sup>20</sup> and PKB varieties) were frequently photographed in the 2011 conflict (Jenzen-Jones, 2012) and were a mainstay of the Gaddafi-era Libyan military (Gander and Ness, 2009). Additionally, a sizeable number of Romanian PSL rifles have cropped up in Libya. A handful of older rifles using this type of ammunition, such as the Mosin-Nagant series, have also been seen (Jenzen-Jones, 2012).

Photographs showing many wooden outer packaging crates and so-called 'spam can' inner sheet metal packaging tins provide additional evidence of the presence of large quantities of Russian 7.62 × 54R mm in Libya.<sup>21</sup> The identified packaging contained either LPS ball rounds, which feature similar construction to the 7.62 × 39 mm PS cartridge discussed above, or B-32 API (Armour-Piercing Incendiary) cartridges (see Photo 7). The API rounds were produced at Barnaul Machine Tool Plant JSC and date from either 1976 or 1977. Some headstamps of fired 7.62 × 54R mm cases indicate that they were produced at Novosibirsk LVE Plant in 1974. In addition, dozens of 7.62 × 54R mm cartridges with green tip colouration have been observed; these are Russian T-46 tracer rounds or similar types produced elsewhere (see the Bulgarian example described below). These appeared to be employed by both sides of the conflict in typical military fashion, with one tracer round for every four or five standard ball rounds in a belt of machine gun ammunition (Jenzen-Jones, 2012).

Several LPS cartridges have appeared to be in particularly good condition, featuring silver tips, GMCS jackets, and red sealant on the cartridge neck.<sup>22</sup> It is possible this is ammunition that was produced later and then shipped with the PSL rifles seen frequently during the conflict. At least one outer wooden packaging crate of 7.62 × 54R mm with Arabic markings has been documented.<sup>23</sup> Its layout and content indicated that it is likely to be of Egyptian or Syrian origin and of several decades old.

There is also photographic evidence of the presence of 7.62 × 54R mm ammunition from former Eastern Bloc countries. These include Bulgarian-produced

Photo 7 7.62 × 54R mm cartridges produced in the USSR (1976 & 1977).<sup>24</sup>



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T-46 tracer cartridges from Durjava Voenna Fabrika (now ARSENAL JSCo.) in Kazanlak, manufactured in 1975,<sup>25</sup> as well as Hungarian ammunition produced at Bakony Fém és Elektromos Készülék Művek (Bakony Metal Works and Electrical Equipment) in 1979. In addition, a Romanian cartridge was produced at Plant 22 but its year stamp was illegible.<sup>26</sup>

## 7.62 × 51 mm ammunition

7.62 × 51 mm ammunition in Libya appears to be primarily associated with FN Herstal FAL battle rifles and MAG (Mitrailleuse d'Appui Général) general-purpose machine guns. Many of these weapons originated from pre-Gaddafi era arsenals within Libya, while others were likely brought into the country from abroad during the conflict (Spleeters, 2012a). The overwhelming majority

of photographed 7.62 × 51 mm ammunition is marked as having been produced by FN Herstal, including a vast quantity (dozens of wooden crates containing 1,000-rounds apiece) of 1978-produced FN Herstal blank cartridges.<sup>27</sup> Other than these blanks, the cartridges seen have been of the SS77 ball (Photo 8) and L78 tracer varieties. Both types feature lead core projectiles with full metal jackets (GMCS) and brass alloy cases. In addition, the L78 tracer includes a small canister containing a pyrotechnic mixture at the base of the bullet. These seemed to be typically employed, much like the 7.62 × 54R mm tracers discussed above, in standard military fashion (Photo 9). The FN Herstal-produced 7.62 × 51 mm was often seen packaged in boxes of 20 cartridges, with each box consisting of four Mauser-style chargers (often referred to as ‘stripper clips’) of five cartridges. Blank rounds were packaged in larger boxes without any chargers.<sup>28</sup>

Swiss-made RUAG ammunition has been sighted in Libya (SwissInfo.ch, 2011) in the form of metal M2A1 containers of 400 cartridges,<sup>29</sup> as well as cardboard packaging of 10 cartridges.<sup>30</sup> The packaging indicates that the cartridges are 146gr 7.62 × 51 mm M80 ball (FMJ) rounds. It is thought that this ammunition may have originated from the USD 2.3 million-worth of ammunition sold to Qatar in 2009 (Knight, 2011).

There is also evidence of Pakistani 7.62 × 51 mm ammunition, with markings on outer packaging suggesting that the armed forces of Qatar may have been the original recipients (Photo 10).<sup>31</sup> The cartridges seen were produced

Photo 8 7.62 × 51 mm ball cartridges on charger and packaging (manufactured by FN Herstal, Belgium).<sup>32</sup>



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Photo 9 7.62 × 51 mm SS77 and L78 cartridges in M13 disintegrating links (manufactured by FN Herstal, Belgium).<sup>33</sup>



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Photo 10 **Packaging containing 7.62 × 51 mm cartridges produced by POF (Pakistan).**<sup>34</sup>



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Photo 11 **Unidentified 7.62 × 51 mm cartridge headstamp (possibly produced by Hirtenberger).**<sup>35</sup>



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in 1981 by the state-owned Pakistan Ordnance Factories (POF) located in the Wah Cantonment in Pakistan.<sup>36</sup> They are stamped 'L2A2', indicating that they conform to British (and formerly Commonwealth) military standards. The 'A2' variant is a 7.62 × 51 mm ball cartridge with a strengthened case.

Finally, an unknown (though marked) 7.62 × 51 mm cartridge has also been located (Photo 11).<sup>37</sup> Whilst it is not possible to conclusively state where, or by whom, this cartridge was manufactured, it does share similarities in construction and marking style with cartridges previously manufactured by Hirtenberger AG of Austria. Hirtenberger no longer produces small arms ammunition; however, during the period in which they did, they were known to have provided ammunition to several embargoed countries including Iraq and Iran (Mötz, 2010). Hirtenberger has also been connected to a company charged with exporting arms to Libya in 1985 (Thurner, 1993). The FN Herstal and supposed Hirtenberger 7.62 × 51 mm cartridges are both marked as conforming to NATO standards.

## 12.7 × 108 mm ammunition

The use of 12.7 × 108 mm ammunition was regularly observed over the course of the Libyan conflict, predominantly in conjunction with DShKM



(Degtyareva-Shpagina Krupnokalibernyy) heavy machine guns and a handful of NSVT (Nikitina-Sokolova-Volkova Tankovyy) heavy machine guns (Jenzen-Jones, 2012). Large quantities of these cartridges have been photographed (Photo 12). The majority of identified 12.7 × 108 mm ammunition is of Russian origin and indicates production at the Novosibirsk Low Voltage Equipment Plant JSC (Novosibirsk LVE). Samples from Novosibirsk LVE were dated from 1977, 1981, and 1982.<sup>38</sup> There are also headstamps from Factory 41 in China and of unmarked Romanian origin that were most likely produced at Uzinele Metalurgice Copsa Mica Cugir (Uzinele Metalurgice CMC),<sup>39</sup> both dating from 1981. The majority of cartridges are B-32 API rounds or equivalents. Packaging for both Russian and Chinese 12.7 × 108 mm ammunition has been photographed, including numerous eighty-round sheet metal containers of Soviet-era B-32 API. One unidentified sheet-metal container marked 'API-T' (Armour-Piercing Incendiary Tracer) and '85rnds' in English has also been sighted.<sup>40</sup>

Photo 12 Crates of Russian and Chinese 12.7 × 108 mm cartridges.<sup>41</sup>



Copyright: Confidential source



## 14.5 × 114 mm ammunition

In the recent conflict in Libya, 14.5 × 114 mm ammunition was predominantly in use with the KPV heavy machine gun and ZPU systems based around the KPV (Jenzen-Jones, 2012). Ammunition types included API, API-T, and High-Explosive Incendiary (HEI). Both brass alloy and lacquered steel cases, as well as a handful of GMCS cases, appeared frequently. The majority of cartridges of this calibre appear to be Soviet/Russian B-32 API rounds, or other Eastern Bloc equivalents. The standard markings are black on red tips for API cartridges and violet on red for API-T (BZT) cartridges. Some mild steel jacketed projectiles were seen in API-T rounds; these are likely to be Soviet BZT cartridges from the 1980s.<sup>42</sup>



Photo 13 **14.5 × 114 mm MDZ HEI cartridge from Uzinele Metalurgice CMC (Romania), 1981.**<sup>43</sup>

Copyright: Damien Spleeters

The cartridge seen in photo 13, with its solid red lacquered projectile, was produced at Uzinele Metalurgice Copşa Mică și Cugir in Romania in 1979. The solid red colouration and the joint 7 mm below the tip mark it as a copy of the Soviet MDZ (Mnogovennogo Deystviya Zazhigatelnyy) cartridge or an HEI round (considered an HE-T or ‘instantaneous incendiary’ by some sources) (Defense Intelligence Agency, 1984: p. 68.1). Some photographs show at least several dozen of these rounds.<sup>44</sup> A number of cartridges from the Ulyanovsk MP, produced in the former USSR, had headstamps indicating that they were produced in 1977 and 1989. Other cartridges included one from Barnaul Machine Tool Plant, manufactured in 1988, and cartridges from State Factory 41 in the China that were dated from 2009 and featured dark brown lacquered steel cases.<sup>45</sup>

Photos 14a and 14b

**Examples of a 14.5 × 114 mm cartridge of unknown provenance.**



Copyright: Confidential source

Two different 14.5 × 114 mm cartridges of unknown provenance have also been sighted in Libya in notable quantities.<sup>46</sup> The first cartridge features lacquered steel cases and projectiles with no tip colouration at all, which indicates that it could be of North Korean origin. North Korea is known to produce API rounds without tip markings,<sup>47</sup> and significant quantities of other North Korean arms and munitions have been sighted in Libya.<sup>48</sup> Another explanation could be drawn from the common Libyan rebel practice of cleaning ammunition in various solvents, particularly gasoline.<sup>49</sup> The headstamps of these cartridges have not been sighted. The second cartridge appears to have brass cases and GMCS bullets marked with either a blue-over-red tip or a blue-over-orange tip. Some observers have suggested that the round may be from Egypt, where a bright violet-over-red API-T is known to be produced. Some reference materials mention a Polish BZT (API-T) with a 'dark blue' tip over red (Koll, 2009). However, this cartridge undoubtedly has a light blue tip colour (Photo 14a), and the Eastern Bloc-style packaging seen (with corresponding blue/red markings) is not clearly visible in the available images.<sup>50</sup> The headstamp on one cartridge, with a blue-over-orange tip, is marked '14.5' at the 12 o'clock position, and '81' at the 6 o'clock position (Photo 14b). It appears that the brass cases were manufactured on machinery made by the French firm Manufacture de Machines du Haut-Rhin (generally referred to as Manurhin). Incidentally, Manurhin had provided 14.5 × 114 mm case production machinery to Chad in the late 1970s,<sup>51</sup> which matches the 1980 date seen on the headstamp.

## 5.56 × 45 mm ammunition

Limited quantities (several boxes) of 5.56 × 45 mm ammunition have been photographed in Libya. While Libya has never held large stocks of weapons chambered for this calibre (Gander and Ness, 2009), purchases by the Gaddafi regime in 2009 from FN Herstal of Belgium marked the arrival of limited quantities of 5.56 mm NATO small arms, in particular the F2000 assault rifle (Rettman, 2011a). In addition, sources report seeing a handful of Chinese-produced CQ assault rifles (a modified copy of the American M16/AR-15 model) as well as Heckler & Koch G36V and G36CV assault rifles.<sup>52</sup> The majority of 5.56 × 45 mm that has been identified was produced by FN Herstal in 2008 (Photo 15). Shipping documents found by HRW indicate that at least 400,000 FN Herstal-manufactured SS109 5.56 × 45 mm cartridges—packed in sets of 1,000 rounds in 400 M2A1 ammunition cans—were delivered to Tripoli in 2009 (see Annexe 2).<sup>53</sup> 60,000 M27 links were also delivered as part of this shipment, that were most likely used with the 30 FN Herstal Minimi light machine guns that were also known to have been delivered to Libya (Belgian Council of State, 2009).

A photograph shows a single box of 20 5.56 × 45 mm cartridges with an 'SB' headstamp,<sup>54</sup> produced by Santa Barbara Sistemas S.A., in Spain, a subsidiary of General Dynamics (Photo 16). Both company names are clearly visible on the packaging.<sup>55</sup> Both the FN Herstal and SB (Santa Barbara) cartridges are of

Photo 15 5.56 × 45 mm from FN Herstal (Belgium), 2008.<sup>56</sup>



Copyright: Damien Spleeters

Photo 16 5.56 × 45 mm packaging from Santa Barbara Sistemas (Spain).<sup>57</sup>



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the SS109 type: lead projectiles with a steel penetrator tip, with gilding metal jackets and brass alloy cases. The SB cartridge exhibits a green sealant on the primer annulus, while the FN Herstal cartridge shows a blue sealant.

## 9 × 19 mm ammunition

Photographs are available for a handful of boxes of 9 × 19 mm ammunition that were mostly produced by FN Herstal, and date from around the same time as the 7.62 × 51 mm ammunition of the same manufacturer.<sup>58</sup> The FN Herstal Browning Hi-Power was seen in limited use during the conflict and appears to be the most prevalent handgun in use (Jenzen-Jones, 2012). The FN Herstal cartridges are standard FMJ ball rounds featuring brass alloy cases and lead bullets with a gilding metal jacket (Photo 17). They were packaged in plastic packs of 25 cartridges (Photo 18).

At least one 9 mm cartridge from Egypt has been photographed. Photo 19 shows (on the far left) a 9 × 19 mm cartridge produced at Factory 27 in 1991. The Arabic characters read 'A.R.E.', an acronym for the Arab Republic of Egypt. The cartridges seen are all 9 × 19 mm calibre but have been loaded into what is either an Enfield No. 2 Mk I or Webley Mk IV revolver. These are chambered for the rimmed .38–200 (essentially a .38 S&W) cartridge which is marginally wider than a 9 × 19 mm cartridge. Chambering a 9 × 19 mm

Photo 17 **9 × 19 mm from FN Herstal (Belgium), 1976.**<sup>59</sup>



Copyright: Damien Spleeters

Photo 18 **Plastic packaging containing 25 9 × 19 mm ball cartridges from FN Herstal.**<sup>60</sup>



Copyright: Damien Spleeters



Photo 19 9 × 19 mm cartridge produced in 1991 at Factory 27 (Egypt), at far left.<sup>61</sup>

Copyright: Confidential source

cartridge in such a weapon can cause the cartridge to be pushed further into the chamber when struck by the hammer. This results in a failure-to-fire known as a 'light strike' as not enough force is exerted on the cartridge head to ignite the primer. Such markings can be seen in Photo 19.

It is also likely that there are either later stocks of 9 × 19 mm ammunition or significant stockpiles of older ammunition, because thousands of new weapons chambered for this calibre were purchased from Beretta in 2009. These include the Px4 Storm handgun and the Cx4 Storm carbine (Rettman, 2011b).

## Obsolete ammunition

The Libyan conflict showcased a diverse array of obsolete and antiquated arms, ranging from Italian-made Carcano rifles and cavalry carbines to Browning M1919 machine guns (Jenzen-Jones, 2012). Similarly, a number of small arms cartridges, typically regarded as obsolete, were documented. Many of these cartridges probably pre-date World War II and are most likely remnants from British, Italian, and other foreign powers' presence in the first half of the 20th century.

Most prominent amongst these cartridges is the 6.5 × 52 mm Carcano, occasionally referred to as the 6.5 × 52 mm Italian or M91/95. A notable

amount of this ammunition can be seen in open source photographs and reports and one headstamp has surfaced. The identified cartridge was produced in 1936 by Società Metallurgica Italiana, in Campo Tizzoro, Italy. Much, if not all, of this ammunition is most likely a surplus from Libya's past as an Italian colony, or alternatively from World War II; reports of rebels using ammunition given to them by their grandfathers make this assumption all the more plausible (Chivers, 2011b). Owing to the notable number of Carcano rifles used by rebel fighters in the earlier stages of the conflict, as well as the lack of reliability inherent in using what was presumably 1920s–1940s vintage ammunition, some 6.5 × 52 mm ammunition was reprimed using a composition extracted from children's toy cap-gun caps to increase the chances of igniting the propellant charge ('Mohamed2011Libyan', 2011). At least one belt of .5 Vickers (.5V) ammunition has also been photographed, although there has not been any indication of the weapon for which the ammunition was being prepared.<sup>62</sup> The cartridges are shown in Prideaux-style steel disintegrating links. This calibre was last mass-produced in World War II, and any ammunition seen is most likely to be at least fifty years old. Libya was under the British administration in the post-World War II period, which may explain the presence of this calibre. The .5V has become so rare nowadays that it is most popular with collectors.

## Other ammunition

Several other calibres of ammunition have been sighted in Libya during and after the conflict. The 5.7 × 28 mm calibre SS190 cartridges that Libya acquired from FN Herstal in 2009 to be used with P90 submachine guns and 'Five-seveN' handguns (Belgian Council of State, 2009), have been seen in limited quantities (Photos 20 and 21). Documents uncovered by Human Rights Watch indicate that at least 217,000 SS190 cartridges were delivered to Tripoli in 2009. These were packed in sets of 2,100 rounds to each M2A1 ammunition can delivered.<sup>63</sup> The SS190 cartridge is built around a steel penetrator core and aluminium sleeve and is designed to defeat a NATO-standard CRISAT<sup>64</sup> target at ranges in excess of 200 m. In addition, FN Herstal delivered 150,000 SB193 cartridges as part of the same 2009 shipment. SB193

Photo 20 5.7 × 28 mm SS190 from FN Herstal (Belgium), 2008.<sup>65</sup>



Copyright: Damien Spleeters

Photo 21 FN P90 magazine loaded with FN-made SS190 5.7 × 28 mm cartridges.<sup>66</sup>



Copyright: Damien Spleeters

cartridges are subsonic rounds designed to be used with suppressors, such as those supplied to Libya with FN Herstal P90 submachine guns.

The presence of FN Herstal-produced .50 BMG (12.7 × 99 mm) calibre ammunition in Libya was also documented, with M33 ball, M17 tracer, AP-M8 AP, and API-M8 API being among the identified cartridges (Photo 22).<sup>67</sup> In addition to FN-produced M2 heavy machine guns, .50 BMG ammunition was also used with Barrett M82A1M and Truvelo 12.7 CMS anti-material rifles (Jenzen-Jones, 2012). Sources have also indicated that Truvelo supplied .50 BMG AP cartridges to Libya,<sup>68</sup> although no details are available regarding their quantity or type.

Photographs are also available for two shotshell headstamps; however, without additional information, such as images of the hulls, case size, and/or packaging, they cannot be conclusively identified. Shotshells are particularly



Photo 22

**FN Herstal .50 BMG:  
4 × API-M8 armour piercing  
incendiary, then 1 × M17  
tracer in M9 links.<sup>69</sup>**

Copyright: Damien Spleeters



difficult to identify from headstamps alone, as a range of third-party producers can be involved in the supply of shotgun hulls (and brass heads) to manufacturers of complete cartridges. Many shotgun cartridges supplied on military contracts follow commercial marking practices, making them difficult to distinguish from cartridges used for civilian purposes. Both of the identified headstamps are following commercial marking practices; the first from Cheddite SRL con socio unico in Italy, and the second from an unidentified manufacturer.

There is also evidence of limited quantities of .30–06 ammunition in Libya, presumably for use with M1919A6 machine guns (Jenzen-Jones, 2012). Photographs show ammunition cans containing British- (and former Commonwealth-) standard L10A1 blank cartridges (Photo 24), as well as fabric belts containing a mixture of tracer and ball cartridges.<sup>70</sup> US .30-06 M2 ball cartridges have been seen packaged in wooden crates of 768 cartridges, with 8 cartridges to a charger.<sup>71</sup>



Photo 23 **9 × 18 mm cartridges produced at Factory 352 (PRC), unmarked year.**<sup>72</sup>

Copyright: Confidential source



Photo 24 **.30–06 L10A1 blank cartridges packed in M2A1 ammunition cans.**<sup>73</sup>

Copyright: Chiron Resources (Ops) Ltd.



Two 9 × 18 mm Makarov pistol cartridges have been recorded, both having been produced by Factory 352 in China, with the year not marked.<sup>74</sup> Despite being a common Eastern Bloc calibre, 9 × 18 mm cartridges appear to be relatively scarce in Libya; pricing information from a source in Libya indicates that they were priced between LYD 10 and 15 (USD 8–12) each, as at June 2012.<sup>75</sup> These particular cartridges show signs of wear from repeated loading/unloading from a magazine (Photo 23).

Commercially produced .25 ACP, .32 ACP, .38 Special, and .357 Magnum ammunition were also seen in small quantities (one or two rounds apiece).<sup>76</sup> Although the available evidence does not make it possible to identify their date of manufacture, these cartridges were most likely from civilian or law-enforcement stocks.

Finally, less-lethal ammunition associated with the FN303 less-lethal launcher is also documented. This glycol-based impact munition is designed to transfer a non-lethal amount of kinetic energy to the target, incapacitating



Photo 25 **FN303 pink marker ammunition outer packaging (150 projectiles).**<sup>77</sup>

Copyright: Damien Spleeters



Photo 26 **FN303 pink marker ammunition inner packaging (15 projectiles).**<sup>78</sup>

Copyright: Damien Spleeters

them or degrading their will to fight. The Belgian regional government cited on the bill of sale that the inclusion of the FN303 launcher and projectiles was in order to 'defend a humanitarian convoy to Darfur', using this defence to justify its approval of the 2009 FN Herstal arms deal it had with Libya (Spleeters, 2012a). Both simple impact and pink washable marker rounds can be identified (Photos 25 and 26).

## Cartridges likely to be present in Libya

Given that weapons chambered in calibres that were not yet covered in this report were seen in Libya, it appears probable that the corresponding ammunition is also available. It is therefore reasonable to assume that there are limited quantities of the following calibres in Libya (brackets indicate the relevant firearms sighted) (Jenzen-Jones, 2012):

- .45 ACP (for M1911 pistols)
- 5.45 × 39 mm (for AKS-74U assault rifles)
- .303 British (for a variety of Lee-Enfield rifles)
- 7.92 × 57 mm Mauser (for the Karabiner 98 Kurz).

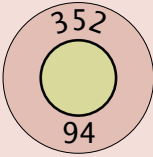
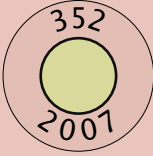
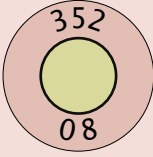
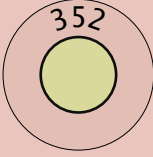
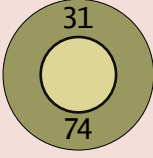
## Conclusion

This initial profile of ammunition in Libya, and in particular the headstamp information contained in its annexe, will prove to be a valuable baseline for keeping track of ammunition flows in Libya and the broader sub-region. Using open-source information, as well as documentation and photographs shared by a multitude of actors, this Working Paper identifies more than sixty different headstamps. This ammunition dates from various years but was mostly produced in the past four decades. Compared with other decades, very few of the identified headstamps indicate a production date during the first arms embargo on Libya between 1992 and 2003. Countries of manufacture are predominantly 'Eastern Bloc' countries and Belgium. The evolution of black market prices suggests a growing demand for handgun ammunition in the post-conflict phase, while local buyers are losing preference for calibres that are for less-concealable long guns.

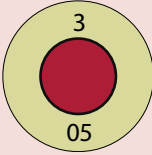
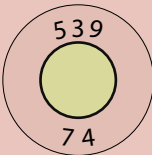
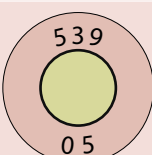
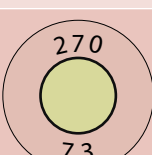
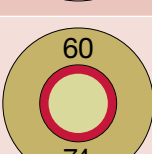
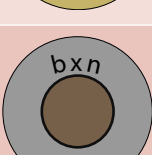
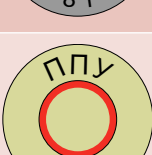
These findings, which are based on a data collection effort that remains limited in its scope, illustrate the value of precise recording and documentation of ammunition in conflict and post-conflict settings. A more systematic examination of ammunition holdings—such as in the framework of weapons collection initiatives—and of seized ammunition, would generate countless additional insights into ammunition flows. Key to such data collection are the government's will to share information normally held as confidential and the identification of stocks held by non-state actors. Equally important is the proper recording of ammunition not only by governments, but also by journalists and other actors. Through this first attempt in the Libyan context, the Survey hopes to raise awareness of the feasibility and utility of ammunition recording and identification in the broader sub-region.

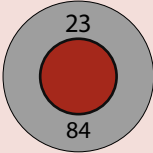
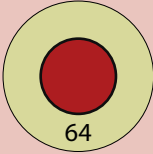
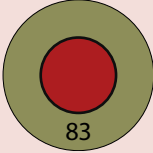

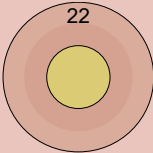
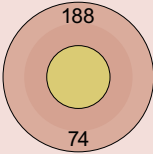
# Annexe 1:

## Small-calibre ammunition identified in Libya

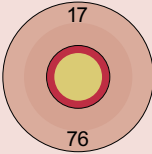
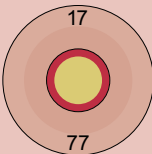
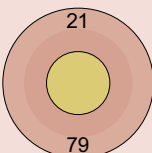
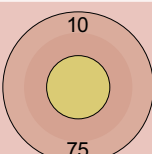
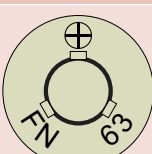
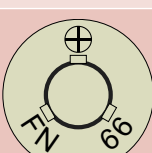
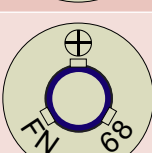
Calibre	Production facility	Year of production	Country of manufacture	Headstamp information	Headstamp diagram	Source material (ref. code)
7.62 x 39 mm	State Factory 352	1994	China (PRC)	352   94		HP07-02
	State Factory 352	2007	China (PRC)	352   2007		HP01-09
	State Factory 352	2008	China (PRC)	352   08		HP01-10
	State Factory 352	Un-marked	China (PRC)	352   *		HP02-01
	State Factory 31	1974	China (PRC)	31   74		HP07-05

\* The headstamp information includes only manufacturer and year data, where available. Calibre markings are included, if present, in the absence of either year or manufacturer. See the headstamp diagrams for other symbols or text, as well as actual layout.

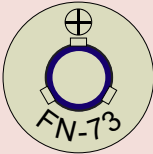
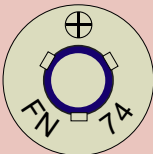
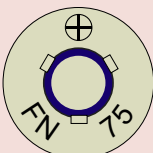
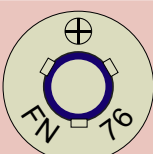
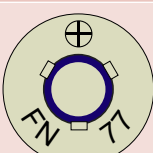
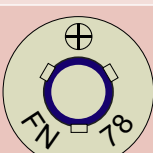
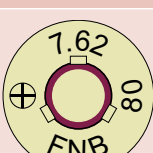
Calibre	Production facility	Year of production	Country of manufacture	Headstamp information	Headstamp diagram	Source material (ref. code)
7.62 x 39 mm	Ulyanovsk Machinery Plant SPA	2005	Russian Federation	3   05		HP01-11
	Tula Cartridge Works	1974	Russian Federation	539   74		HP01-12
	Tula Cartridge Works	2005	Russian Federation	539   05		HP01-13
	Soviet State Factory, Lugansk	1973	USSR (now Ukraine)	270   73		HP01-14
	Soviet State Factory, Frunze <sup>79</sup>	1974	USSR (now Kyrgyzstan)	60   74		HP04-01
	Sellier & Bellot Prague	1981	Czechoslovakia (now Czech Republic)	bxn   81		HP01-15
	Prvi Partizan	1982	Yugoslavia (now Serbia)	ППУ   1982		HP04-01

Calibre	Production facility	Year of production	Country of manufacture	Headstamp information	Headstamp diagram	Source material (ref. code)
7.62 × 39 mm	Mátravidéki Féművek <sup>80</sup>	1984	Hungary	23   84		HP07-04
	S.C. Mechanical Plant Sadu S.A.	1964	Romania	*   64		HP03-02
	S.C. Mechanical Plant Sadu S.A.	1983	Romania	*   83		HP07-01
	Unknown	1974	Unknown	? <sup>81</sup>   74	 (Headstamp not legible)	HP01-19
	Unknown	2005	Russian Federation	? <sup>82</sup>   05	(Headstamp not sighted)	PP02-01
	7.62 × 54R mm	Plant 22	Illegible	Romania	22   ? <sup>83</sup>	
Novosibirsk LVE Plant JSC		1974	USSR (now Russian Federation)	188   74		HP01-21

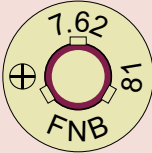
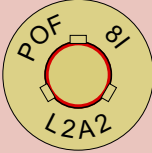


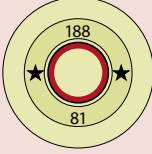

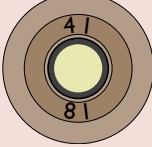
\* The headstamp information includes only manufacturer and year data, where available. Calibre markings are included, if present, in the absence of either year or manufacturer. See the headstamp diagrams for other symbols or text, as well as actual layout.

Calibre	Production facility	Year of production	Country of manufacture	Headstamp information	Headstamp diagram	Source material (ref. code)
7.62 × 54R mm	Barnaul Machine Tool Plant JSC	1976	USSR (now Russian Federation)	17   76		PP02-02
	Barnaul Machine Tool Plant JSC	1977	USSR (now Russian Federation)	17   77		PP02-02
	Bakony Fém és Elektromos Készülék Művek	1979	Hungary	21   79		PP99-08 <sup>‡</sup>
	Durjava Voenna Fabrika <sup>84</sup>	1975	Bulgaria	10   75		CO04-01, CP04-04
7.62 × 51 mm	Fabrique Nationale d'Herstal	1963	Belgium	FN   63		HP01-01
	Fabrique Nationale d'Herstal	1966	Belgium	FN   66		HP01-16
	Fabrique Nationale d'Herstal	1968	Belgium	FN   68		HP01-02

<sup>‡</sup> The precise location and date of the photo are not known or verifiable.

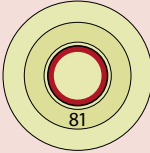
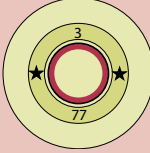
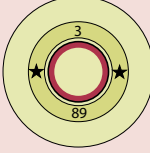
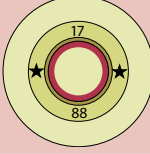
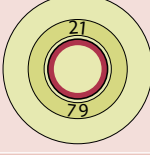
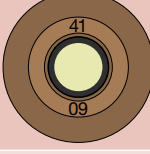
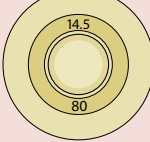
Calibre	Production facility	Year of production	Country of manufacture	Headstamp information	Headstamp diagram	Source material (ref. code)
7.62 × 51 mm	Fabrique Nationale d'Herstal	1973	Belgium	FN   73		HP01-04
	Fabrique Nationale d'Herstal	1974	Belgium	FN   74		HP01-03
	Fabrique Nationale d'Herstal	1975	Belgium	FN   75		HP01-35
	Fabrique Nationale d'Herstal	1976	Belgium	FN   76		HP01-36
	Fabrique Nationale d'Herstal	1977	Belgium	FN   77		HP01-05
	Fabrique Nationale d'Herstal	1978	Belgium	FN   78		HP01-06
	Fabrique Nationale d'Herstal	1980	Belgium	FNB   80		HP01-07



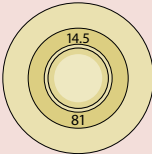
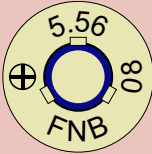
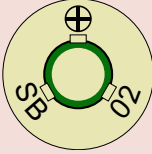
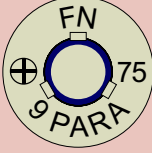
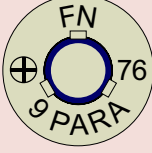


Calibre	Production facility	Year of production	Country of manufacture	Headstamp information	Headstamp diagram	Source material (ref. code)
7.62 x 51 mm	Fabrique Nationale d'Herstal	1981	Belgium	FNB   81		HP01-08
	Pakistan Ordnance Factories	1981	Pakistan	POF   81		HP01-18
	Unknown (possible Hirtenberger)	1981	Unknown	*   81		HP02-03, CP04-04
12.7 x 108 mm	Novo-sibirsk LVE Plant JSC	1977	USSR (now Russian Federation)	188   77		PP02-03
	Novo-sibirsk LVE Plant JSC	1981	USSR (now Russian Federation)	188   81		HP99-01 <sup>#</sup>
	Novo-sibirsk LVE Plant JSC	1982	USSR (now Russian Federation)	188   82		HP04-01
	State Factory 41	1981	China (PRC)	41   81		HP04-01

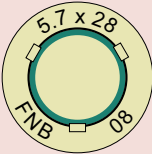
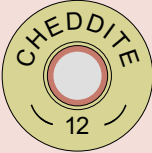
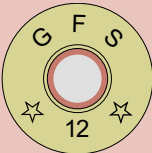

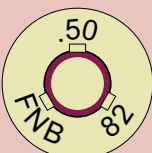
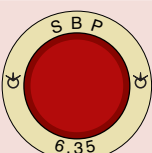
# The precise location and date of the photo are not known or verifiable.

\* The headstamp information includes only manufacturer and year data, where available. Calibre markings are included, if present, in the absence of either year or manufacturer. See the headstamp diagrams for other symbols or text, as well as actual layout.

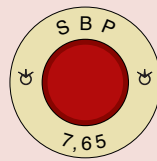
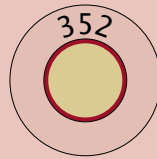


Calibre	Production facility	Year of production	Country of manufacture	Headstamp information	Headstamp diagram	Source material (ref. code)
12.7 × 108 mm	Uzinele Metalurgice Coșea Mică și Cugir	1981	Romania	*   81		HP04-01
	Ulyanovsk Machinery Plant SPA	1977	USSR (now Russian Federation)	3   77		HP04-01
14.5 × 114 mm	Ulyanovsk Machinery Plant SPA	1989	USSR (now Russian Federation)	3   89		HP04-01
	Barnaul Machine Tool Plant JSC	1988	USSR (now Russian Federation)	17   88		HP01-22
	Uzinele Metalurgice Coșea Mică și Cugir	1979	Romania	21   79		HP01-23
	State Factory 41	2009	China (PRC)	41   09		HP02-02
	Unknown	1980	Unknown	14.5   80		HP04-01

\* The headstamp information includes only manufacturer and year data, where available. Calibre markings are included, if present, in the absence of either year or manufacturer. See the headstamp diagrams for other symbols or text, as well as actual layout.

Calibre	Production facility	Year of production	Country of manufacture	Headstamp information	Headstamp diagram	Source material (ref. code)
14.5 x 114 mm	Unknown	1981	Unknown	14.5   81		HP14-01
	Fabrique Nationale d'Herstal	2008	Belgium	FNB   08		HP01-24
9 x 19 mm	Santa Barbara Sistemas	2002	Spain	SB   02		HP01-25
	Fabrique Nationale d'Herstal	1975	Belgium	FN   75		HP11-01
	Fabrique Nationale d'Herstal	1976	Belgium	FN   76		HP01-26
	Fabrique Nationale d'Herstal	1977	Belgium	FN   77		HP01-27
	Factory 27	1991	Egypt (A.R.E.)	٢٧   ٩١		HP11-01

Calibre	Production facility	Year of production	Country of manufacture	Headstamp information	Headstamp diagram	Source material (ref. code)
5.7 × 28 mm	Fabrique Nationale d'Herstal	2008	Belgium	FNB   08		HP01-28
	Fabrique Nationale d'Herstal	2009	Belgium	FNB   09	(Headstamp not sighted)	CD08-02/03
12 gauge <sup>85</sup>	Unknown	Unknown	Unknown	CHEDDITE   12		HP01-29
	Unknown	Unknown	Unknown	GFS   12		HP01-30
6.5 × 52 mm Carcano	Società Metallurgica Italiana	1936	Italy	SMI   936		HP03-01
.50 BMG (12.7 × 99 mm)	Fabrique Nationale d'Herstal	1982	Belgium	FNB   82		PP99-01 <sup>‡</sup>
.25 ACP (6.35 × 16 mm SR)	Sellier & Bellot Prague	Unmarked	Czech Republic	SBP   6,35		HP01-31



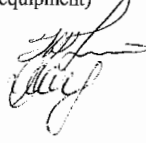
<sup>‡</sup> The precise location and date of the photo are not known or verifiable.

Calibre	Production facility	Year of production	Country of manufacture	Headstamp information	Headstamp diagram	Source material (ref. code)
.32 ACP (7.65 x 17SR mm)	Sellier & Bellot Prague	Unmarked	Czech Republic	SBP   7,65		HP01-32
9 x 18 mm	State Factory 352	Unmarked	China (PRC)	352   *		HP07-03
.38 Special (9.1 x 29R mm)	Winchester- Olin	Unmarked	United States	W-W   *		HP01-33
.357 Magnum (9 x 33 mm R)	Federal Cartridge Corporation	Unmarked	United States	FEDERAL   *		HP01-34

\* The headstamp information includes only manufacturer and year data, where available. Calibre markings are included, if present, in the absence of either year or manufacturer. See the headstamp diagrams for other symbols or text, as well as actual layout.

# Annexe 2: Shipping documents retrieved by Human Rights Watch (HRW)

Documents retrieved and shared by Peter Bouckaert of Human Rights Watch.

Marks and No	Description of goods (code)	Unit of measurement	Quantity	Mass, kg gross/net	Type of package	Package Nos
<b>Exporter FSUE "ROSOBORONEXPORT" PACKING LIST №434/3/2/BR/5680</b> Contract № 27/2004/P/343406131003 of 19.04.2004 Order-narjad № P/343406131003-411447 or 19.11.2004						
<b>Consignee PROCUREMENT DEPARTMENT</b> <b>TRIPOLY, LIBYA</b>						
Sheet – 1				Sheets – 1		
1	7,62 mm cartridge, model 1943, with steel core bullet (designation 57-N231)	796 rds.	1440	30 23,5	812 case	5680/13900/24324
<b>Marking</b> 7,62 ПСГ обр. 43 К 29-05                      ВУФЛ 2 К 05 720 шт. 1.4S                      № ООН 0012   4C2/ Y40/S/05 RUS GOST 26319/BCP				PACKING LIST № 434/3/A/BR/b (434-Consignee's country code, approved in Russia, 3 - number of the item acc. to the Appendix No 1 to the contract, A - No of the Exporter's shipment Lot, BR - indication of the manufacturer; b - packages No of the manufacturer Lot), SHIPMENT LOT N': A/BR (A - No of the Exporter's shipment Lot, BR - indication of the manufacturer), CASE N': b/c/d (b - packages No of the manufacturer Lot, c - total quantity of the packages on the manufacturer Lot, d - total quantity of this manufacturer's packages which have been delivered to the Consignee, taking into account this Lot of the manufacturer's equipment)		
EXPORT CONTRACT N° 27/2004/P/343406131003 PORT OF LOADING: OKTYABRSK, CIS PORT PORT OF DESTINATION: TRIPOLI, LIBYA SUPPLIER: FSUE "ROSOBORONEXPORT" CUSTOMER: PROCUREMENT DEPARTMENT, TRIPOLI, LIBYA				Signature  14 4		
SHIPMENT LOT N': 2/BR CASE N': 5680/13900/24324 GROSS WEIGHT/NET WEIGHT, 30/ 23,5 KG GOODS CONTRACT INDEX: 343406131003-03				Date 24.03.05		



FN HERSTAL



18077

Date : 15/05/2009

NOTE DE COULSAGE N° : 18077

Émise par : LENAERTS Ludo

Date MAD: 15/05/2009

Ordre : CONTRACT NO 20/2008

Réf FN : 102760 LBY /LBY

Copie à : Assurance Qualité

Magasin Produits Fimis

Réception Sid FN : Oui

Réc. Commission Belge : Non

Réception client : Oui (à FN)

Le matériel décrit ci-après a été accepté et est tenu à la disposition de l'expédition

Date :	Nom :	Visa :
--------	-------	--------

OBSERVATIONS - RAPPORT D'INSPECTION

A VALOIR



**NOTE DE COLLAGE**

N°: 18077      Date MAD: 13/05/2009      Order: CONTRACT NO 20/2008      LBY / LBY  
 2 colis      Ref FN: 102760

Emission par: LENAERTS Ludo

1	Palette	Longueur	: 125 (cm)	Poids Brut	: 955 000 (kg)
		Largeur	: 108 (cm)	Poids Net	: 761 600 (kg)
Numero(s):	1191	Hauteur	: 53 (cm)	Poids net poudre	: 55 507 (kg)
		Volume	: 0,7155 (m³)		

Contenant:

Pos	Position Order	Produit	No Catalogue	Article	NSN	Quantite
159	03-008-001	CART. 5,7 SSI 90 BALL EN CAISSES M2A1 F		4800000401		117600

Lot(s) : 102760 LBY : No 1191 117600 /colis

1	Palette	Longueur	: 125 (cm)	Poids Brut	: 811 000 (kg)
		Largeur	: 108 (cm)	Poids Net	: 641 800 (kg)
Numero(s):	1192	Hauteur	: 53 (cm)	Poids net poudre	: 46 917 (kg)
		Volume	: 0,7155 (m³)		

Contenant:

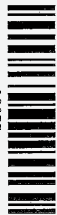
Pos	Position Order	Produit	No Catalogue	Article	NSN	Quantite
159	03-008-001	CART. 5,7 SSI 90 BALL EN CAISSES M2A1 F		4800000401		99400

Lot(s) : 102760 LBY : No 1192 99400 /colis

pos 159 217000 cart 5,7 SSI 90  
lot 211 FNB 08



---FAL  
PAGE: B0897



18077

Page: 2 / 2  
Date: 15/05/2009

emballage:  
103 M2A1 à 2100 cart  
nr 01 à 105

1 M2A1 à 700 cart  
nr 104

1 palette nr 1191 à 117600 cart  
1 palette nr 1192 à 99400 cart

manquages:  
1 4 S UN 0012

Marques :  
PURCHASE DEPARTMENT  
GASER BEN GASHIR  
TRIPOLI  
LIBYA  
Order: CONTRACT NO 20/2008

Position	Produit	Désign. Article	Qté	Qté Ordre	Qté Emballée	Qté Notes	Qté M2AD
159	480000401	C:5.7SS190-CTN50M2A1 FIOCCHI	217000.0	217000.0	217000.0	217000.0	217000.0



18076

Date : 15/05/2009

**NOTE DE COLIAGE** N° : 18076

Emission par : LENAERTS Ludo  
Date MAD: 15/05/2009

Ordre : CONTRACT NO 20/2008  
Rsf FN : 102760 LBV /LBV  
Copie à : Assurance Qualités  
Magasin Produits Firms

Réception Sid FN : Oui  
Réf. Commission Belge : Non  
Réception client : Oui (à FN)

Le matériel décrit ci-après a été accepté et est tenu à la disposition de l'expédition

Date : / / Nom : Visa :

OBSERVATIONS - RAPPORT D'INSPECTION

A VALOIR



18076

Page : 1/2  
Date: 15/05/2009

**NOTE DE COLISAGE**

N° : 18076  
8 colis

Date MAD: 15/05/2009

Order : CONTRACT NO 20/2008  
REFTN : 102760

LBY /LBY

Émise par : LENAERTS Ludo

7	Palette			Longueur : 125 (cm)	Poids Brut : 897,000 (Kg)
1199	1200	1201	1202	Largueur : 108 (cm)	Poids Net : 677,600 (Kg)
1204	1205			Hauteur : 53 (cm)	Poids net poudre : 94,752 (Kg)
				Volume : 0,7135 (m³)	

Contenant :

Pos Position Order

Produit

No Catalogue

Article

NSN

Quantite

414 03-020-002  
CART. 5,56 BALL SSI109, BULK, 1000/M2A1,  
56000/PAL

4600000101

1305-13-118-7531

392000

1	Palette			Longueur : 125 (cm)	Poids Brut : 153,000 (Kg)
Numero(s) :				Largueur : 108 (cm)	Poids Net : 96,800 (Kg)
1206				Hauteur : 34 (cm)	Poids net poudre : 13,536 (Kg)
				Volume : 0,4590 (m³)	

Contenant :

Pos Position Order

Produit

No Catalogue

Article

NSN

Quantite

414 03-020-002  
CART. 5,56 BALL SSI109, BULK, 1000/M2A1,  
56000/PAL

4600000101

1305-13-118-7531

8000

pos 414: 400000 cart 5,56 SSI109

Lot(s) : 102760 LBY : No 1199, No 1200,  
No 1201, No 1202, No 1203, No 1204, No 1205

Lot(s) : 102760 LBY : No 1206



18076

Page: 2 / 2  
Date: 15/05/2009

lot 142 FNB 08

emballage:  
400 MZAI à 1000  
nr 1 à 168  
nr 225 à 456

7 palettes à 56000  
1 palette à 8000

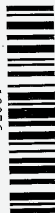
marquages:  
14 S UN 0012

Marques :  
PURCHASE DEPARTMENT  
GASER BEN GASHIR  
TRIPOLI  
LIBYA  
Order: CONTRACT NO.20/2008

Position	Produit	Description	Qté	Qté-Order	Qté-Emballage	Qté-Voies	Qté-MAD
414	4600000101	C. 5.56 SSI09:CTN:MZAI PAL.5600	400000.0	400000.0	400000.0	400000.0	400000.0



FN HERSTAL



18076

Date : 15/05/2009

**NOTE DE COLIAGE**

N° : 18076

Émise par : LENAERTS Ludo

Date M.A.D. : 15/05/2009

Ordre :

CONTRACT NO 20/2008

Ref FN :

102760 LBY /LBY

Copie à :

Assurance Qualité  
Magasin Produits Fins

Réception Std FN : Oui

Réc. Commission Belge : Non

Réception client : Oui (à FN)

Le matériel décrit ci-après a été accepté et est remis à la disposition de l'expédition

Date :	Nom :	Visa :
--------	-------	--------

OBSERVATIONS - RAPPORT D'INSPECTION

A VALOIR

J: B0897

18076



Page: 1 / 2  
Date: 15/05/2009

**NOTE DE COUlage**

N° : 18076      Date MAJ: 15/05/2009      Order : CONTRACT NO 20/2008      LBY / LBY  
8 colis      Ref FN : 102760

Émise par : LENAERTS Ludo		Longueur :		Poids Brut :	
7	Palette	1201	1202	1203	
1199	1200	1201	1202	1203	
1204	1205				
		Longueur :	125 (cm)	Poids Brut :	897,000 (Kg)
		Largeur :	108 (cm)	Poids Net :	677,600 (Kg)
		Hauteur :	53 (cm)	Poids net poudre :	94,732 (Kg)
		Volume :	0,7153 (m³)		

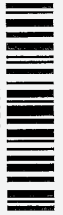
Pos	Position Ordre	Produit	No Catalogue	Article	NSN	Quantite
414	03-020-002	CART. 5,56 BALL SSI09, BUIJK, 1000/MZAI, 56000/PAL		4600000101	1305-13-118-7531	392000
Loc(s) : 102760 LBY : No 1199, No 1200, No 1201, No 1202, No 1203, No 1204, No 1205						

1	Palette	Longueur :	125 (cm)	Poids Brut :	153,000 (Kg)
		Largeur :	108 (cm)	Poids Net :	96,800 (Kg)
		Hauteur :	34 (cm)	Poids net poudre :	13,536 (Kg)
		Volume :	0,4590 (m³)		

Pos	Position Ordre	Produit	No Catalogue	Article	NSN	Quantite
414	03-020-002	CART. 5,56 BALL SSI09, BUIJK, 1000/MZAI, 56000/PAL		4600000101	1305-13-118-7531	8000
Loc(s) : 102760 LBY : No 1206						

pos 414: 400000 cart 5,56 SSI09

~ 40897



18076

Page : 2 / 2  
Date : 15/05/2009

lot 142 FNB 08

emballage:  
400 MZAI à 1000  
nr 1 à 168  
nr 225 à 456  
7 palettes à 56000  
1 palette à 8000

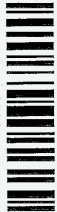
marquages:  
14 S UN 0012

Marques :  
PURCHASE DEPARTMENT  
GASER BEN GASHIR  
TRIPOLI  
LIBYA  
Order: CONTRACT NO 20/2008

Position	Produit	Dessin Article	Qté	Qté Orde	Qté Finales	Qté Netes	Qté MAD
414	4600000101	C.5.56 SS109.CTINMZAI FAL5600	4000000,0	4000000,0	4000000,0	4000000,0	4000000,0



FN HERSTAL



18109

Date : 15/05/2009

**NOTE DE COLISAGE**

N° : 18109

Emission par : LENAERTS Ludo

Date MAD: 15/05/2009

Ordre : CONTRACT NO 20/2008

Ref FN : 102760 LBY / LBY

Copie à : Assurance Qualité  
Magasin Produits Fins

Reception Sid FN : Oui

Réc. Commission Belge: Non

Reception client : Oui (à FN)

Le matériel décrit ci-après a été accepté et est tenu à la disposition de l'expédition

Date :	Nom :	Visa :
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OBSERVATIONS - RAPPORT D'INSPECTION

A VALOIR



ALSTAL  
CAGE: B0897



18109

Page: 1 / 2  
Date: 15/05/2009

**NOTE DE COUJAGE**

N°: 18109  
2 colis

Date MAD: 15/05/2009

Order: CONTRACT NO 20/2008  
Ref FN: 102760

LBV / LBV

Émise par : LENAERTS Ludo

1	Palette	Longueur :	125 (cm)	Poids Brut :	1117,000 (Kg)
		Largeur :	108 (cm)	Poids Net :	952,000 (Kg)
Numéro(s) :	1193	Hauteur :	53 (cm)	Poids net poudre :	26,107 (Kg)
		Volume :	0,7155 (m³)		

Contenant :

Pos	Position Order	Produit	No Catalogue	Article	NSN	Quantite
160	03-008-002	CART. 5,7 SB193 SUBSONIQUE EN CAISSES M2A1		4800000224	1305-13-118-4913	117600
					Lot(s) : 102760 LBV : No 1193	117600 / collis

1	Palette	Longueur :	125 (cm)	Poids Brut :	377,500 (Kg)
Numéro(s) :	1194	Largeur :	108 (cm)	Poids Net :	262,500 (Kg)
		Hauteur :	53 (cm)	Poids net poudre :	7,193 (Kg)
		Volume :	0,4725 (m³)		

Contenant :

Pos	Position Order	Produit	No Catalogue	Article	NSN	Quantite
160	03-008-002	CART. 5,7 SB193 SUBSONIQUE EN CAISSES M2A1		4800000224	1305-13-118-4913	32400
					Lot(s) : 102760 LBV : No 1194	32400 / collis

pos 160 150 000 cart 5,7 subsonic SB193

lot FNB09D061-004



18109

emballages:  
71 M2A1 à 2100 cart nr 01 à 71  
1 M2A1 à 900 cart nr 72  
matériel cercles sur 1 palette nr 1191 à 117600 cart  
+ 1 palette nr 1194 à 32400 cart

marquages:  
1,4 S UN 0012

Marques :  
PURGHASE DEPARTMENT  
GASER BEN GASHIR  
TRIPOLI  
LIBYA  
Order CONTRACT NO 20/2008

Position	Produit	Dessin Article	Qté	Qté Order	Qté Emballage	Qté Nosse	Qté MARD
160	480000224	C57 SB193 CTN50,M2A12100	150000,0	150000,0	150000,0	150000,0	150000,0



FN HERSTAL



18076

Date : 15/05/2009

**NOTE DE COLISAGE**

N° : 18076

Emise par : LENAERTS Ludo

Date M.A.D. : 15/05/2009

Ordre : CONTRACT NO 20/2008

Ref FN : 102760 LBV / LBV

Copie à : Assurance Qualité

Magasin Produits Fins

Réception Sid FN : Oui

Réc. Commission Belge : Non

Réception client : Oui (à FN)

Le matériel décrit ci-après a été accepté et est tenu à la disposition de l'expédition

Date :	Nom :	Visa :
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OBSERVATIONS - RAPPORT D'INSPECTION

A VALOIR



19076

**NOTE DE COLIAGE**      N° : 18076      Date MAD: 15/05/2009      Order : CONTRACT NO 20/2008      LBY /LBY

Émise par : LENAERTS Ludo

Numero(s) :	1200	1201	1202	1203	Longueur	125 (cm)	Poids Brut	897,000 (Kg)
1199	1200	1201	1202	1203	Largeur	108 (cm)	Poids Net	677,600 (Kg)
1204	1205				Hauteur	53 (cm)	Poids net poudre	94,752 (Kg)
					Volume	0,7155 (m³)		

Contenant :      Position Order      Produit      No Catalogue      Article      NSN      Quantite

414      03-020-002      CART. 5.56 BALL SSI09, BUJK, 1000MZA1, 56000PAL      4600000101      1305-13-118-7531      392000

Lot(s) : 102760 LBY : No 1199, No 1200,  
No 1201, No 1202, No 1203, No 1204, No 1205

1	Palette	Longueur	125 (cm)	Poids Brut	153,000 (Kg)
		Largeur	108 (cm)	Poids Net	96,800 (Kg)
		Hauteur	34 (cm)	Poids net poudre	13,536 (Kg)
		Volume	0,4590 (m³)		

Contenant :      Position Order      Produit      No Catalogue      Article      NSN      Quantite

414      03-020-002      CART. 5.56 BALL SSI09, BUJK, 1000MZA1, 56000PAL      4600000101      1305-13-118-7531      8000

Lot(s) : 102760 LBY : No 1206

FNHERSTAL  
CAGE: B08997



18076

Page: 2/2  
Date: 15/05/2009

lot 142 FNB 08

emballage:  
400 MZAI à 1000

nr 1 à 168

nr 225 à 456

7 palettes à 56000

1 palette à 8000

marquages:  
I 4 S UN0012

Marques :  
PURCHASE DEPARTMENT

GASER BEN GASHIR

TRIPOLI

LIBYA

Order: CONTRACT NO 20/2008

Position	Product	Description	Qty	Qty Order	Qty Inbalie	Qty Stock	Qty MATD
414	460000101	C. 5.56 SSI 09-CTN/MZAI PAL5600	400000.0	400000.0	400000.0	400000.0	400000.0



FNHERSTAL



18113

Date : 15/05/2009

**NOTE DE COLIAGE**

N° : 18113

Émise par : LENAERTS Ludo

Date MAD: 15/05/2009

Orde :

CONTRACT NO 20/2008

Ref FN :

102760 LBY / LBY

Copie à :

Assurance Qualité  
Magasin Produits Finis

Réception Sid FN : Oui

Ré. Commission Belge : Non

Réception client : Oui (à FN)

Le matériel décrit ci-après a été accepté et est tenu à la disposition de l'expédition

Date :	Nom :	Visa :
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OBSERVATIONS - RAPPORT D'INSPECTION

A VALOIR

480897



18113

Page: 1/2  
Date: 15/05/2009

**NOTE DE COLIAGE**

N° : 18113      Date MAD: 15/05/2009      Ordre : CONTRACT NO 20/2008      LBV / LBV  
1 colis      RefTN : 102760

Émise par : LENAERTS Ludo

1	Palette	Longueur :	120 (cm)	Poids Brut :	157,000 (kg)
Numéro(s) :	1211	Largeur :	100 (cm)	Poids Net :	129,000 (kg)
		Hauteur :	41 (cm)		
		Volume :	0,4920 (m³)		

Contenant :

Pos	Position Ordre	Produit	No Catalogue	Article	NSN	Quantité
413	03-020-001	MAIL M27 CART 5,56 CONDITIONNE		4600001137		60000

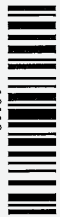
Lot(s) : 102760 LBY : No 1211 60000 / colis

pos 413: 60000 mailions M27 cart 5,56  
lot ROS 2-021

emballage:  
6 bres de 10000 mailions  
sur palette 120 x 100

Marques : PURCHASE DEPARTMENT  
GASER BIEN GASHIR  
TRIPOLI  
LIBYA  
Order-CONTRACT NO 20/2008

50897



18113

Page: 2 / 2  
Date: 15/05/2009

Position	Product	Descr Article	Qty	Qty Order	Qty Emballe	Qty Moins	Qty MAD
413	4600001137	MAL. M27 CART 5.56 CONDITIONNE	60000,0	60000,0	60000,0	60000,0	60000,0



# Notes

- 1 While the sources of photos and information need to remain anonymous in several instances, all sources are credited by a unique reference code using the following typology: HP for headstamp photos; PP for packaging photos; CP for cartridge photos; CD for cartridge documentation; and CO for correspondence. Codes marked with a superscript '#' symbol refer to information where the precise location and date of the photo are not known or verifiable. Further details may be made available upon request on a case-by-case basis. Please contact: [weaponsid@smallarmssurvey.org](mailto:weaponsid@smallarmssurvey.org).
- 2 The Small Arms Survey welcomes additional information and photographs, which can be submitted at [weaponsid@smallarmssurvey.org](mailto:weaponsid@smallarmssurvey.org).
- 3 References CO04-01 and CO06-01.
- 4 It should be noted that, although it appears that the majority of 7.62 × 51 mm ammunition in Libya was produced by FN Herstal, this report may have more extensive coverage of these cartridges as a result of information received from Damien Spleeters, a Belgian journalist who has focused on ammunition of Belgian origin.
- 5 References CO04-01 and CO00-01; all prices taken from both Benghazi and Tripoli.
- 6 Small quantity purchase (20 rounds), working on USD 8.00/USD 10.00 a box. Conversion rate: LYD 1 = approx. USD 0.80 (does not account for taxes, etc.); [cheaperthandirt.com](http://cheaperthandirt.com), accessed April 2012.
- 7 Reference number CO11-01.
- 8 Small quantity purchase (20 rounds), working on USD 6.50 a box. Conversion rate: LYD 1 = approx. USD 0.80 (does not account for taxes, etc.); [cheaperthandirt.com](http://cheaperthandirt.com), accessed April 2012. It should be noted that US civilian 7.62 × 39 mm ammunition does not feature a mild steel core as present in the majority of Eastern Bloc 7.62 × 39 cartridges.
- 9 Soviet designation code for the 7.62 × 39 mm cartridge.
- 10 Soviet designation code for the 7.62 × 39 mm PS Ball cartridge. Also written '57-N231'; as on shipping document CD08-01.
- 11 Reference number CP07-01.
- 12 Reference number PP02-04.
- 13 Reference number CD08-1.
- 14 Reference number PP02-01.
- 15 See reference number HP01-11.
- 16 See reference number HP01-13.
- 17 See reference number CO01-01.
- 18 Reference number HP01-15.
- 19 Reference number PP02-01.
- 20 Also referred to as the 'PKTM'.

- 21 Reference numbers PP02-02 and CP99-01<sup>#</sup>.
- 22 Reference number CP99-01<sup>#</sup>.
- 23 Reference number PP99-02<sup>#</sup>.
- 24 Reference number PP02-02.
- 25 Reference number CP04-04.
- 26 Reference number HP01-20.
- 27 Reference numbers PP99-05<sup>#</sup> and CP99-02<sup>#</sup>.
- 28 Reference number PP99-09.
- 29 Reference number PP09-03.
- 30 Reference number PP09-04.
- 31 Reference number PP02-05.
- 32 Reference number CP01-03.
- 33 Reference number PP01-01.
- 34 Reference number PP02-05.
- 35 Reference number HP02-03.
- 36 Reference number HP01-18.
- 37 Reference number HP02-03.
- 38 Reference numbers PP02-03, HP99-01<sup>#</sup>, and HP04-01.
- 39 Reference number HP04-01.
- 40 Reference number PP12-01.
- 41 Reference number PP02-03.
- 42 Reference number CP99-03<sup>#</sup>.
- 43 Reference number CP01-02.
- 44 See reference number CP99-08<sup>#</sup>.
- 45 Reference number HP02-02.
- 46 Reference numbers CP99-05<sup>#</sup> and CP99-04<sup>#</sup>.
- 47 Reference number CO09-01.
- 48 Reference number CP99-08<sup>#</sup>.
- 49 Reference number CP99-09.
- 50 Reference number PP99-07<sup>#</sup>.
- 51 Reference number CO-002.
- 52 Reference number CO05-01.
- 53 Reference number CD08-03.
- 54 Reference number HP01-25.
- 55 Reference number PP01-04.
- 56 Reference number HP01-24.
- 57 Reference number PP01-04.
- 58 These are likely to have been purchased during the early years of the Gaddafi regime.
- 59 Reference number HP01-26.
- 60 Reference number PP01-03.
- 61 Reference number HP11-01.
- 62 Reference number CP99-07<sup>#</sup>.
- 63 Reference number CD08-02, CD08-03.

- 64 Collaborative Research Into Small Arms Technology.  
65 Reference number HP01-28.  
66 Reference number CP01-04.  
67 Reference number PP99-01<sup>#</sup>.  
68 Reference number CO00-03.  
69 Reference number CP01-05.  
70 Reference number CP99-06<sup>#</sup>. It is possible that these are 7.62 × 51 mm cartridges, depending on the calibre the weapon is chambered for.  
71 Reference number PP13-01.  
72 Reference number CP07-02.  
73 Reference number PP10-01.  
74 Reference number HP07-03.  
75 Reference number CO07-01.  
76 Reference numbers HP01-31, HP01-32, HP01-33, and HP01-34.  
77 Reference number PP01-05.  
78 Reference number PP01-06.  
79 Soviet State Factory, Frunze is now known as 'Bishkek Machine Building Factory BMZ'.  
80 Mátravidéki Fémművek is now known as 'MFS 2000 Magyar Lőszergyártó Rt'.  
81 The headstamp is not completely legible. It possibly reads '60', and is possibly from the Soviet State Factory in Frunze.  
82 The headstamp was not seen; it was extrapolated from packaging markings.  
83 The year stamp was illegible.  
84 Durjava Voenna Fabrika is now known as 'ARSENAL JSCo'.  
85 See note on shotshell identification under *Other ammunition*.

# Bibliography

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## Occasional Papers

- 1 *Re-Armament in Sierra Leone: One Year After the Lomé Peace Agreement*, by Eric Berman, December 2000
- 2 *Removing Small Arms from Society: A Review of Weapons Collection and Destruction Programmes*, by Sami Faltas, Glenn McDonald, and Camilla Waszink, July 2001
- 3 *Legal Controls on Small Arms and Light Weapons in Southeast Asia*, by Katherine Kramer (with Nonviolence International Southeast Asia), July 2001
- 4 *Shining a Light on Small Arms Exports: The Record of State Transparency*, by Maria Haug, Martin Langvandslien, Lora Lumpe, and Nic Marsh (with NISAT), January 2002
- 5 *Stray Bullets: The Impact of Small Arms Misuse in Central America*, by William Godnick, with Robert Muggah and Camilla Waszink, November 2002
- 6 *Politics from the Barrel of a Gun: Small Arms Proliferation and Conflict in the Republic of Georgia*, by Spyros Demetriou, November 2002
- 7 *Making Global Public Policy: The Case of Small Arms and Light Weapons*, by Edward Laurance and Rachel Stohl, December 2002
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- 12 *Small Arms in Kyrgyzstan: Post-revolutionary Proliferation*, by S. Neil MacFarlane and Stina Torjesen, March 2007, ISBN 2-8288-0076-8, also in Kyrgyz and Russian (first printed as *Kyrgyzstan: A Small Arms Anomaly in Central Asia?*, by S. Neil MacFarlane and Stina Torjesen, February 2004)
- 13 *Small Arms and Light Weapons Production in Eastern, Central, and Southeast Europe*, by Yudit Kiss, October 2004, ISBN 2-8288-0057-1
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- 24 *Arms in and around Mauritania: National and Regional Security Implications*, by Stéphanie Pézard with Anne-Kathrin Glatz, June 2010, ISBN 978-2-940415-35-9 (also available in French)
- 25 *Transparency Counts: Assessing State Reporting on Small Arms Transfers, 2001–08*, by Jasna Lazarevic, June 2010, ISBN 978-2-940415-34-2
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- 31 *Internal Control: Codes of Conducts within Insurgent Armed Groups*, by Olivier Bangerter, November 2012, ISBN 978-2-9700816-8-5

## Special Reports

- 1 *Humanitarianism Under Threat: The Humanitarian Impact of Small Arms and Light Weapons*, by Robert Muggah and Eric Berman, commissioned by the Reference Group on Small Arms of the UN Inter-Agency Standing Committee, July 2001
- 2 *Small Arms Availability, Trade, and Impacts in the Republic of Congo*, by Spyros Demetriou, Robert Muggah, and Ian Biddle, commissioned by the International Organization for Migration and the UN Development Programme, April 2002
- 3 *Kosovo and the Gun: A Baseline Assessment of Small Arms and Light Weapons in Kosovo*, by Anna Khakee and Nicolas Florquin, commissioned by the United Nations Development Programme, June 2003
- 4 *A Fragile Peace: Guns and Security in Post-conflict Macedonia*, by Suzette R. Grillot, Wolf-Christian Paes, Hans Risser, and Shelly O. Stoneman, commissioned by United Nations Development Programme, and co-published by the Bonn International Center for Conversion, SEESAC in Belgrade, and the Small Arms Survey, June 2004, ISBN 2-8288-0056-3

- 5 *Gun-running in Papua New Guinea: From Arrows to Assault Weapons in the Southern Highlands*, by Philip Alpers, June 2005, ISBN 2-8288-0062-8
- 6 *La République Centrafricaine: Une étude de cas sur les armes légères et les conflits*, by Eric G. Berman, published with financial support from UNDP, July 2006, ISBN 2-8288-0073-3
- 7 *Small Arms in Burundi: Disarming the Civilian Population in Peacetime (Les armes légères au Burundi : après la paix, le défi du désarmement civil)*, by Stéphanie Pézard and Nicolas Florquin, co-published with Ligue Iteka with support from UNDP–Burundi and Oxfam–NOVIB, in English and French, August 2007, ISBN 2-8288-0080-6 ISSN 1661-4453
- 8 *Quoi de neuf sur le front congolais ? Evaluation de base sur la circulation des armes légères et de petit calibre en République du Congo*, par Robert Muggah et Ryan Nichols, publié avec le Programme des Nations Unies pour le Développement (PNUD)–République du Congo, décembre 2007, 2-8288-0089-X
- 9 *Small Arms in Rio de Janeiro: The Guns, the Buyback, and the Victims*, by Pablo Dreyfus, Luis Eduardo Guedes, Ben Lessing, Antônio Rangel Bandeira, Marcelo de Sousa Nascimento, and Patricia Silveira Rivero, a study by the Small Arms Survey, Viva Rio, and ISER, December 2008, ISBN 2-8288-0102-0
- 10 *Firearms-related Violence in Mozambique*, a joint publication of the Ministry of the Interior of Mozambique, the World Health Organization–Mozambique, and the Small Arms Survey, June 2009, ISBN 978-2-940415-14-4
- 11 *Small Arms Production in Brazil: Production, Trade, and Holdings*, by Pablo Dreyfus, Benjamin Lessing, Marcelo de Sousa Nascimento, and Júlio Cesar Purcena, a joint publication with Viva Rio and ISER, September 2010, ISBN 978-2-940415-40-3
- 12 *Timor-Leste Armed Violence Assessment Final Report*, edited by Robert Muggah and Emile LeBrun, a joint publication of ActionAid, AusAID, and the Small Arms Survey, October 2010, ISBN 978-2-940415-43-4
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