

Documenting Small Arms and Light Weapons

A Basic Guide

Introduction

This Issue Brief was written with a range of professionals in mind. For those who are involved in the military or law enforcement communities, or who spend time in conflict zones as journalists or with non-governmental organizations (NGOs) or government agencies, this Brief should provide some insight into the often-murky world of arms identification. It is designed to serve as a basic how-to guide for recording relevant identification characteristics of small arms and light weapons that may be encountered in the field. The primary purpose of the brief is to ensure that all essential data is recorded accurately, so that a specialist may make a conclusive identification.

After reviewing the definitions of small arms and light weapons, the value

of accurate identification of arms and munitions, the basic elements of arms tracing, and the relevant legal framework, this Issue Brief offers a step-by-step approach to documenting small arms and light weapons. It also features a section on safety procedures (see Box 1) and guidelines for undertaking documentation work in the field (see Box 2). The Brief concludes with a section on the weapon that is most commonly observed in conflict zones: the AK rifle and its variants, copies, and derivatives.

Scope of this Issue Brief

There is no universally accepted definition of a 'small arm' or a 'light weapon'. The Small Arms Survey largely adopts the proposal put forward by the 1997 UN Panel of Governmental Experts, which considers portability a defining characteristic. The Panel's list includes

both civilian and military weapons that fire a projectile, with the condition that the unit or system may be carried by an individual or a small number of people, or transported by a pack animal or a light vehicle. This Issue Brief covers techniques applicable to the following small arms and light weapons:

- **small arms:** handguns, rifles and carbines, assault rifles, shotguns, sub-machine guns, and light and medium ('general-purpose') machine guns; and
- **light weapons:** heavy machine guns, grenade launchers, portable anti-aircraft guns, portable anti-tank guns, recoilless rifles, rocket launchers, portable anti-tank guided weapons (ATGWs), man-portable air defence systems (MANPADS), and mortars of calibres up to and including 120 mm.

Other organizations may have slightly different definitions. The UN and the Organization for Security and Co-operation in Europe, for instance, include only mortars of 'less than 100 mm' (UNGA, 1997; OSCE, 2000). These definitions exclude common mortars in 100 mm and 120 mm calibre (see Berman and Leff, 2008, p. 27), which are often employed in much the same manner as their smaller-calibre counterparts (such as 81 mm or 82 mm mortars).

Why is it important to identify arms and munitions accurately?

Arms and munitions are evidence. Many carry marks that, combined



A journalist documents mortar projectiles in Iraq, 2013. Source: C.J. Chivers/*The New York Times*

with their physical characteristics, identify them uniquely. If they can be identified uniquely, their ownership history may be traced and the point at which they were diverted into the illicit sphere revealed. Arms tracing can help uncover illicit supply channels and identify arms diversion, thereby providing a firm basis for disrupting such trade and prosecuting those involved in it. In recent years, the international community has come to recognize that arms tracing can be central to efforts designed to detect, and hence address, the illicit proliferation and misuse of small arms.

Why attempt an arms tracing procedure in a country that is experiencing or has recently emerged from armed conflict? Illicit arms transfers fuel conflict and allow protagonists to rearm for war or crime after hostilities have ceased. In both contexts, ‘conflict tracing’ may be used to monitor potentially escalatory influxes of weapons and to investigate particular cases of concern. Arms tracing is enabled by the accurate identification of the arms or munitions in question; conversely, it is hindered by inaccurate identification.

Arms tracing

Arms tracing has been defined as:

the systematic tracking of illicit small arms and light weapons found or seized on the territory of a State from the point of manufacture or the point of importation through the lines of supply to the point at which they became illicit (UNGA, 2005, para. 5).

The first step in any tracing operation is to identify the weapon of interest on the basis of its physical characteristics and markings. Then, with the cooperation of the states that manufactured or imported the weapon, the second step is to track changes in ownership through available documentary records. The ultimate, often elusive goal of weapons tracing is to identify the point in the transfer chain at which the (typically) legal weapon entered the illicit market. Three pillars—marking, record-keeping, and cooperation—are essential to successful tracing.

- **Marking:** Unmarked weapons generally cannot be identified uniquely. While a weapon’s design may enable interested parties to identify its manufacturer, markings indicating the manufacturer and country of manufacture are almost always indispensable to tracing. The presence of a unique serial number allows one weapon to be distinguished from hundreds or thousands of others that may have been produced at a particular factory. Moreover, if countries mark the weapons that they import, tracing efforts are far more likely to succeed.
- **Record keeping:** Key elements of a weapon’s history—in particular, changes in ownership—must be recorded (in print, in databases, and with photographs) for tracing to be possible. Records must be accurate, comprehensive, and retrievable if investigators are to have any chance of piecing together the weapon’s history. Essential information includes the weapon type and model, its serial number, and the party to which it was transferred.
- **Cooperation in tracing:** Even if the necessary marking and record-keeping requirements have been met, tracing efforts will be brought to a swift halt if the countries of manufacture or import—or trading entities within those countries—do not cooperate with tracing requests. After having identified the weapon uniquely, an investigator seeking tracing assistance typically approaches the countries of manufacture or import for help. Sometimes investigators contact relevant trading companies directly. Thereafter, they follow the record-keeping chain forward in time—if possible, to the point at which the weapon was diverted from the last legal custodian into the illicit sphere. In many cases, tracing procedures designed to identify arms transferred to conflict zones may draw on existing research that has identified regular trafficking routes and patterns of illicit weapons flows. Sources may include analysis by organizations such as the Small Arms Survey,

Armament Research Services (ARES), and Conflict Armament Research, or official government or UN reports.

Put simply, identification enables tracing. This Issue Brief concerns itself mainly with the first aspect of arms tracing: identifying unique weapons through a combination of their physical identification characteristics and markings.

International policy and legal framework

International instruments, such as politically binding agreements and legally binding treaties, provide important architecture to support the control of illicit arms. Following is a brief summary of some of the more important instruments relating to small arms and light weapons.

In December 2005, the United Nations General Assembly adopted the **International Tracing Instrument (ITI)**,² a politically binding instrument that formalized the importance of marking, record-keeping, and cooperation in tracing to help combat the spread of illicit small arms and light weapons.

Specifically, the ITI requires states to ensure the marking of all manufactured small arms and light weapons with the name of the manufacturer, the country of manufacture, and a serial number. In addition, the marking of the weapon type/model, calibre, and year of manufacture is encouraged (UNGA, 2005, para. 8a). If possible, imported small arms and light weapons are to have markings permitting identification of the country and year of import. They must also ensure a serial number is present (para. 8b). With regard to record-keeping, states are required to keep records of manufacture for at least 30 years, and all other records, including those on imports and exports, for at least 20 years (para. 12). The ITI also outlines how states are to cooperate with tracing requests, by providing, subject to narrow exceptions, information sought by the requesting state that is relevant to the tracing of illicit small arms and light weapons.

The **Arms Trade Treaty (ATT)** has a broader scope and covers a wide

range of conventional weapons, as well as, for certain purposes, ammunition and parts and components, but narrows its regulatory focus to international transfers of weapons. The ATT is legally binding for states parties.

The UN **Programme of Action**³ covers small arms and light weapons and includes commitments on such things as manufacture, stockpile management, surplus identification and disposal, and disarmament.

The UN **Firearms Protocol**⁴ is another international instrument relating to the control of small arms (firearms), their parts and components, and ammunition. National laws and regional instruments are further important elements of small arms control.

The **International Small Arms Control Standards** and **International Ammunition Technical Guidelines** offer guidance on good practice regarding the control of small arms and ammunition, respectively.

Fieldwork and data collection

Arms tracing, regardless of the context in which it is applied, is based on observation of the types of weapons in use, whether these are held and employed legally or illegally. This approach provides an essential component in developing a baseline⁵ of weapons in a given region, one that can become the basis for detecting influxes of new or more numerous weapons—which might provide the first evidence for a subsequent, more detailed investigation. In Mali in early 2013, for example, the sudden appearance of distinctive Belgian NR-160 high-explosive anti-tank recoilless cartridges suggested dispersion of the munitions from Libya, an assumption that was later confirmed (Chivers, 2013). These munitions stood out against other recoilless gun cartridges that had been common in the region.

Fieldwork is at the heart of arms tracing, with images of arms, markings, packaging, shipping documents, and other recorded data enabling further research and analysis. Whether it serves to take inventory of captured rebel arms on the frontlines, or to establish a baseline of weapons during a

physical security and stockpile management inspection, fieldwork provides the raw data analysts need to draw broader conclusions. Fieldwork may be supported or enhanced through the collection of data from other sources, such as mainstream media, social media, and reports by relevant organizations or government agencies.

Seeking specialist advice

While this Issue Brief provides a basic introduction to the processes and procedures of arms identification, it is important to note that arms and munitions identification is a very broad and complex field, filled with unknowns, ingrained errors, ‘armchair experts’, and disinformation. Arms and munitions identification is also a very dynamic field, with new information frequently coming to light. As a consequence, the identification of any item should be considered tentative until confirmed by a subject matter

specialist. It is important to note that most organizations and individuals do not require the ability to identify weapons on sight; for most NGOs that work on arms and munitions issues, maintaining an extensive staff of specialists to cover all of the possible arms and munitions would be impractical and prohibitive. Provided with the correct information, such as clear photographs of all relevant characteristics and other recorded information, a subject matter specialist—often a contractor or another organization—can carry out this task subsequently.

Identifying small arms and light weapons

In the broadest sense, small arms are weapons that can be carried and employed with relative ease by a single combatant. In some instances, militaries or armed groups may use small arms with assistant gunners,

Box 1 Safety considerations

Before handling any arms or munitions, you should take appropriate safety training courses. If you do not have specialist knowledge, never assume that arms or munitions are safe to handle until they have been inspected by a subject matter specialist, such as an armourer, ammunition technical officer, or explosive ordnance disposal technician.

Avoid handling arms and munitions unless absolutely necessary.

The golden rules

When handling firearms, remember the four ‘golden rules’ of firearms safety:

- **Always treat the weapon as if it were loaded, until you have personally confirmed the contrary.**
- **Always keep the muzzle of the weapon pointed in a safe direction.** Ensure the weapon is pointed away from you and others during all unload and clear procedures.
- **Always keep your finger off the trigger unless you intend to fire the weapon or perform a required function check.**
- **Always keep the weapon unloaded unless you intend to fire it.** If you need to function check the weapon with ammunition, use drill or dummy rounds⁶ instead of live ammunition.

Unload and clear procedures

Unload and clear procedures—for unloading weapons and rendering them safe to handle—should only be attempted by properly trained personnel. Whenever feasible, ask a weapon’s owner to unload the weapon for you, and confirm it is unloaded before handling it. If you must unload a weapon yourself, ask the owner’s permission before doing so. Always remember to conduct both a visual and tactile inspection to confirm the safety of a weapon.

If you must attempt an unload and clear procedure for a small arm,⁷ and you do not have weapon-specific, step-by-step instructions, remember these basic steps:

- Remove the ammunition source—the magazine, clip, belt, or individual rounds—from the weapon.
- Cycle the weapon’s action (by using the cocking handle/s, bolt handle, or similar part) and, if possible, hold the action open.
- Visually inspect the weapon’s chamber, magazine housing, feed ramps, and other areas that may feed live ammunition, to ensure they are clear.

If possible, these steps should be taken with a weapon’s safety mechanisms engaged. In some cases, however, it may not be possible to clear a weapon with the safety or safeties engaged.

spotters, or other additional personnel besides the operator of the weapon system. Generally speaking, organizations and specialists consider the small arms category to include only weapons that meet the portability criterion if they fire a non-explosive projectile. Systems that are operable by one person but that fire an explosive projectile, such as a light rocket launcher or grenade launcher,⁸ are classified as light weapons. In practice, this definition is blurred by the availability of explosive ammunition for small arms. As noted above, there are no universally agreed-upon definitions of ‘small arms’ or ‘light weapons’.

Identifying features

Arms tracing essentially aims to identify the type and model, manufacturer and country of origin, and serial number—usually based on markings, identifying features, or a combination thereof. While conclusive arms tracing is only possible with each of these three pieces of information, certain trends and general conclusions may be drawn from more limited information. In some cases, markings may be illegible or abraded, such that identification requires observation of a weapon’s design features.

The first step in identifying a weapon is an examination of the entirety of the system in profile. Photos should first be taken of both side profiles of the weapon, and subsequently of more specific identifying features. Small arms, most of which make use of cartridge-based ammunition, have some typical features. Figure 1 shows the main parts of a typical rifle, in this case an AK-type rifle.⁹

A **buttstock**, or simply stock, is the portion of a weapon designed to be braced against the shoulder in order to promote accuracy and, if relevant, controlled automatic fire. Stocks tend to be either fixed or collapsible. Collapsible stocks are generally top-folding, under-folding, side-folding, or telescoping.

The **fore end**, or hand guard, is the portion of the weapon designed to be grasped with the support hand while the weapon is being manipulated or operated. Hand guards often cover portions of the barrel that would quickly become too hot to handle, particularly during automatic fire. Fore ends may also incorporate (generally folding) bipods, bayonet lugs, rail interface systems (for mounting accessories), or forward-folding leaf sights for launching grenades. Note that fore ends are not present on the vast majority of handguns, whose more prominent feature is the pistol grip.

Collectively, the buttstock and the fore end (along with other non-critical, ergonomic components of the weapon, such as the pistol grip) are often referred to as ‘furniture’. A weapon’s furniture may be wooden, synthetic, metallic, or—more rarely—made of other materials.

Many weapons are available in various similar models, many of which are most easily differentiated by their **barrel length** or **muzzle attachments**. Muzzle attachments are most commonly flash hid-ers (sometimes ‘flash suppressors’), compensators, or muzzle brakes, or a combination thereof. The latter two are designed to reduce the felt recoil and muzzle rise of a firing weapon, particularly during automatic fire. Muzzle attachments are often permanently or semi-permanently attached to the weapon. Other barrel and muzzle

Figures 2a-2d Selected muzzle attachments



Figure 2a Compensator muzzle attachment.



Figure 2b A spigot muzzle attachment, designed to allow the launch of rifle grenades.



Figure 2c A simple muzzle nut attachment.



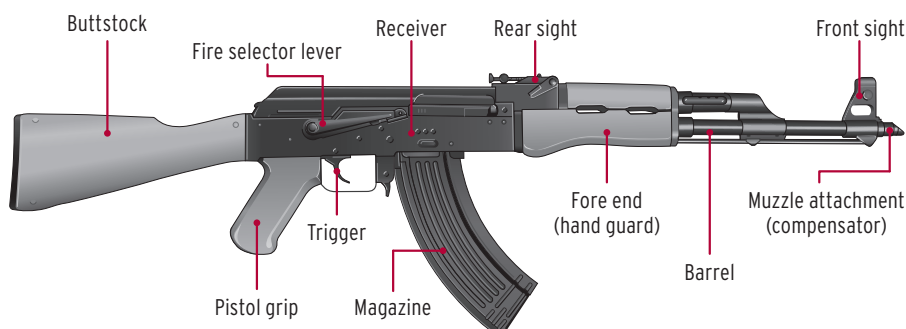
Figure 2d A combination flash hider/compensator muzzle attachment.

Source: Small Arms Survey

attachments—such as integral suppressors, bayonet lugs, and rifle grenade launching spigots—may also be encountered (see Figures 2a–2d).

Arms are commonly found with ammunition, which is often loaded in **magazines**, drums, belts, or chargers (stripper clips). Collectively, these items are known as **feed devices**. The most commonly encountered magazines are removable box magazines, most often either straight-walled or slightly curved. Documenting feed devices may assist with identifying a specific weapon. AK-type rifles are often found with their distinctive banana-shaped magazines, for example, and different curvature profiles can help to identify different calibre rifles within a given ‘family’. The appearance of a certain type of feed device—or its absence—can sometimes provide evidence independent of the weapons themselves, pointing to trouble with supply, lack of combatant knowledge, or other logistical considerations. Even if found independently, a magazine may hold diagnostic potential, allowing for a partial identification of the weapon systems in use. Feed devices may also feature their own markings, as described below.

Figure 1 Typical features of a modern military rifle



Weapon markings

Along with the physical characteristics of a weapon, its markings can provide useful identification information. The majority of arms bear marks applied by the manufacturer, while many also show the marks of parties that transfer, import, export, or assemble arms. These types of markings can provide information such as the manufacturer, country of origin, weapon model, calibre, modes of operation, and the exporting or importing company or country. Weapons may also feature serial numbers, which can be of particular value to the tracing process.

It is important to document and assess all markings on a weapon, in combination with the physical characteristics of the weapon. In rare cases, markings do not reflect a weapon's true origin or model. Counterfeit or copy weapons are produced in certain parts of the world, particularly in the Khyber Pass region and in the Philippines; reproduction weapons are produced both for and by consumers who are interested in historical or military arms; and weapons may have been refurbished or refinished in a way that is not consistent with their original purpose or design.

Manufacturer, factory, arsenal, and country markings, if present, are among the strongest identification characteristics (see Figures 3a–3d). If a positively identified manufacturer marking is consistent with the overall physical features of a weapon, a tentative ID is relatively easy to establish. Factory, arsenal, and country markings can dramatically reduce the number of identification possibilities. Manufacturer and factory markings may take the form of the name of the manufacturer or factory, an alphanumeric code, a symbol, or a combination thereof. In some cases, factory or manufacturer markings may be difficult to distinguish from other markings on a weapon. Country markings may take the form of the name of the country of origin, or a national coat of arms, crest, or symbol. In some cases, country markings may narrow the possible years of production; if a weapon bears the mark 'Yugoslavia', for instance, it

Figures 3a-3e **Example markings on firearms**



Figure 3a Weapon markings on a Russian AK-103-2 self-loading rifle. Visible markings include the manufacturer marking, serial number, model designation, and calibre. Source: Damien Spleeters



Figure 3b Weapon markings on a Belgian FN Herstal Browning Hi-Power self-loading pistol. Visible markings include the serial number (in two locations), the calibre, and proof marks. Source: N.R. Jenzen-Jones/ARES



Figure 3c Weapon markings on a German Heckler & Koch G36 type self-loading rifle. Visible markings include the manufacturer marking, model designation, calibre, and fire selector marks (pictogram type). Marking that appears to be a serial number ('B-252') has been engraved over an abraded factory-marked serial number. Source: Damien Spleeters



Figure 3d Import markings (showing country of origin, importing party, model, and calibre) on a Polish Kbk AKM self-loading rifle imported into the United States. Also visible are factory, year of production, and serial number markings. Note that the import markings on this weapon misidentify it as an ‘AK47’. Source: N.R. Jenzen-Jones/ARES



Figure 3e Weapon markings on a Belgian FN Herstal Five-sevenN self-loading pistol. Visible markings include calibre markings (duplicated in two locations), serial number, and customer-specific markings presumably applied at the time of manufacture. In this case, the Arabic text reads ‘32nd Reinforced Brigade’, referring to the Libyan Army formation to which the handguns were issued. Source: Damien Spleeters

must have been produced between 1929 and 2003. The country of origin may also be indicated by proof marks, as described below.

Along with manufacturer or factory markings, **model designations** can be among the strongest identifying characteristics. **Calibre designations**, while perhaps slightly less useful, can help to narrow identification to certain models and to add to the picture in general (see Figure 3e). Calibre designations may be rendered in imperial or metric units, and may use either the decimal point or decimal comma. They may also be marked using non-English scripts or

conventions. Both model and calibre designations may be added by importers, assemblers, and other parties after manufacture. In some cases, notably with AK-type rifles imported into the United States, an importer’s or assembler’s markings may not be technically correct. In the United States, for example, various imported AK-type rifles have been documented with markings stating they are ‘AK-47’ rifles, although they are not.

Serial numbers are generally engraved, cast, or stamped onto firearms by producers as a way of tracing, dating, identifying, or recording the

weapon. They most often appear as an alphanumeric code, sometimes incorporating factory, model, or year designations. Serial numbers may be used to trace weapons if they are recorded in import, export, or in-country transfer documentation. **Year of production markings** may be stamped separately from serial numbers and are generally stamped in four- or two-digit configurations. In some cases, firearms do not bear serial numbers or year marks despite international norms.

Note that serial numbers are often stamped or partially stamped on various components of the weapon. Occasionally, serial numbers on different parts of a weapon do not correspond. The weapon may have been assembled from a collection of parts (by an individual, a wholesaler or builder, or manufacturers or assemblers), it may have had replacement parts installed, parts may not be matched at the factory, or the markings may represent something other than partial serial numbers. Serial numbers may be removed intentionally or unintentionally. Marks that seem similar to serial numbers may be applied after production by importers, assemblers, or other parties.

Markings on a weapon’s fire selector, safety, or sights can also be good indicators of origin, model, or similar information. An examination of the fire selector, for instance, can serve to distinguish many semi-automatic models of a given weapon from their selective-fire counterparts. Lettering or symbols used to mark the fire selector, safety positions, and sight increments—particularly the ‘zero’ or ‘battle sight’ setting on many weapons—can in many cases suggest a specific country of origin or manufacturer. It should be noted, however, that some nations use similar or identical markings on some weapons, such that markings should be considered diagnostic rather than conclusive. Some weapons may have folding leaf sights for launching rifle grenades, which can also be informative. Such markings should be examined and recorded.

Proof marks and inspection marks are applied to firearms and firearm

parts that have been inspected and test-fired to ensure they comply with certain enforced standards. Proof marks are generally underwritten by government entities in countries with a history of proofing, including many in Europe. These marks can be used to trace weapons or components to certain countries and may also assist in narrowing down a production time-frame. In some cases, especially those involving marks applied by certain manufacturers in the United States and the Russian Federation, proof marks can even determine the manufacturer or factory of production.

Import markings may be applied by either exporters or importers, usually in order to comply with legislation in the destination country. In the United States, for example, all firearms imported after 1968 must feature the name, city, and state of the importing firm (ATF, 2005). Import markings are often applied in a fashion that differs from those of original markings; in some cases, the firearm may not be refinished in the same manner, with the result that its physical appearance may differ from the typical model.

Many **other types of markings** may be applied to small arms and light weapons, in various locations (see Figure 4). These may be applied by original manufacturers, end users, or any other parties in the transfer chain. Markings may include safety warnings, unit markings, inventory control markings, and 'rack numbers'¹⁰ that are assigned to issued weapons. Grips, stocks, barrels, and any other part may be marked. The process of documenting arms should entail a thorough visual inspection to ensure nothing is overlooked.

Feed devices and ammunition

All feed devices and ammunition should also be examined for markings (see Figures 5a and 5b). It is important to record whether ammunition or feed devices were found loaded into the weapon in question, or merely found alongside it. If feed devices are loaded with cartridges, that should be documented.

Figure 4 **Other markings**



A barcode sticker applied to a Belgian FN Herstal F2000 assault rifle. Source: Damien Spleeters

Packaging and documentation

Many weapons will be observed with **packaging** and, to a lesser extent, documentation. Packaging can be either outer packaging, such as wooden shipping crates, or, in some cases, inner packaging, such as weapons cases, plastic packaging, or greaseproof or bituminous paper (see Figure 6). Packaging can provide valuable clues

as to the origin, place of production, type, and destination of the arms in question. It may also reveal clues as to ports of transit, dates of transfer, and other important information.

Documentation, if found, can be among the finest sources of information uncovered in the field. Import, export, or in-country transfer documentation can speak to much larger

Figures 5a-5b **Feed devices and ammunition**



Figure 5a The magazine from a German Sturmgewehr 44 (StG 44), also known as the MP 43 and MP 44. The weapon model marking is visible. Source: C.J. Chivers/*The New York Times*



Figure 5b A partial serial number stamped on the floor-plate of a Romanian TTC 7.62 x 25 mm magazine. Source: N.R. Jenzen-Jones/ARES

Figure 6 **Packaging**



A packing crate, photographed in Libya in 2012, bearing markings indicating that it contained PKMS general-purpose machine guns, associated spare parts, and accessories. Note that the crate contains vz. 58 type rifles, highlighting the caution to be used when documenting packaging, particularly that which has already been opened. Source: Nicolas Florquin/Small Arms Survey

Figure 7 Documentation

PURCHASE DEPARTMENT
 TRIPOLI, LIBYA

COPY

DOCUMENTARY CREDIT NUMBER 101LINF093550001
 DESCRIPTION OF GOODS AND/OR SERVICES
 SUPPLY OF MATERIAL
 AS PER CONTRACT NO:98/2009, DTD:3.12.2009
 CIP TRIPOLI AIRPORT, LIBYA

For transport to Tripoli International Airport, Libya

PACKING LIST

Box 21 of 28

Qty	Description	Nett Weight
5	Truvelo Sniper Rifles CMS 7,62x51Nato including magazine, bipod, silencer and fitted with telescope Rifle # Nos: TRV2713, TRV2714, TRV2715, TRV2716, TRV2717	40kg
5	Magazines	1kg
5	Carrying Cases Hard (Aluminium)	55kg
5	Carrying Bags	18.5kg
5	Cleaning Kits consisting of: Bag, oil bottle, nitro bottle, flannelette, brushes brass, cleaning rod, lenspen Set of Allen keys	4kg
5	Extractor Kit comprising of: Extractor, Extractor Pin and Extractor Spring Firing Pin, Firing Pin Spring	0.2kg
5	Technical, Operator and Maintenance Manual	1kg
5	Telescope booklet	-

Packing Marking:
 Above articles packed in wooden crate suitable for airfreight.

Measurements:
 Length: 1550mm
 Width: 900mm
 Height: 550mm

Total Nett Weight of Box 21 : 119.7kg
 Total Gross Weight of Box 21: 181.7kg

Documentation for an international export includes bolt-action sniper rifles, magazines, protective carrying cases, cleaning equipment, additional components, and manuals. Note that the documentation contains the serial numbers of the five rifles shipped. Additional information, such as the number of boxes (28), may be useful to researchers. Source: Peter Bouckaert/Human Rights Watch

shipments than the arms themselves; it may provide evidence of contract dates, order quantities, ports of transfer, and country of origin (see Figure 7).

Auxiliary attachments and accessories

Arms are often found with accessories or attachments, such as sound suppressors, optical sights ('optics'), foregrips, under-barrel grenade launchers, or flashlights (see Figures 8a and 8b). Such accessories can both provide clues as to the origins of the weapons they are found with, and serve as indicators of state or government support. Accessories and attachments generally have their own markings, similar

to those found on arms. Careful attention should be paid to markings such as serial numbers and factory symbols.

The AK rifle and its variants, copies, and derivatives

There is no more ubiquitous family of arms on the battlefields of modern conflicts than the AK-type assault rifle and its many derivatives. These weapons have earned a deserved reputation as being tough and reliable. Their popularity is such that they are the most prolific assault rifles in the world, with at least 70 million AK rifles produced to date (Killicoat, 2007; ARES, 2015). They have been widely copied and can thus be difficult to differenti-

Figures 8a-8b Attachments and accessories



Figure 8a Markings on a North Korean copy of a PG0-7B optical sight. Source: Damien Spleeters



Figure 8b Markings on a Maxim brand suppressor, including manufacturer name, manufacturer location, and patent date. Source: Ian McCollum/ARES

ate and identify correctly. In fact, most firearms that are identified in news media as 'AK-47' rifles are actually later AKM¹⁴ rifles or other derivatives of the original AK, which appear similar to the untrained eye. In general, the term 'AK-47' is inaccurately applied and should be avoided (Ferguson and Jenzen-Jones, 2014).

The original AKM is a selective-fire, self-loading rifle (generally considered an assault rifle) chambered for the 7.62 × 39 mm calibre cartridge. It features a long-stroke gas-operating system and fires from a closed bolt. It weighs roughly 3.1 kg (unloaded) and has an overall length of 876.3 mm. It is most often fed from a 30-round removable box magazine (MoD of the USSR, 1968).

Box 2 How to go about documenting arms and munitions

Fieldwork techniques

If you rely on the permission and assistance of combatants in order to conduct your work—as is the case with many journalists and NGOs in the field—you may need to encourage such individuals by explaining the purpose and importance of your work and their assistance. You should explain clearly that any gathered information or materials—such as names or photos—may constitute evidence for future use. In most cases, however, information gathered about arms or ordnance will not be linked to an individual; you should be able to gather these details while maintaining the anonymity of any users in question. You should explain this point to anyone whose weapons you intend to photograph.

Depending on the area in which you are working, your affiliation, and the security situation, the process of documenting arms may pose a security risk. You should make an informed assessment of the security situation before approaching combatants and seeking to document weapons. If specific risks are likely to be associated with such work, it may be advisable to document arms or munitions indoors, away from passers-by and civilians. Do not move unexploded ordnance or explosive remnants of war under any circumstances, however.

If you are looking for particular arms or munitions in a given area, you may find it useful to carry a 'scrapbook' (hard copy and electronic) of images to show to people in the area who are less familiar with arms. It is also a good idea to research local names and terminology for certain arms in advance, and to familiarize yourself with the identification characteristics of the expected arms and munitions of the region. Organizations such as Armament Research Services, Conflict Armament Research, and the Small Arms Survey produce reports and maintain blogs that identify arms and munitions documented in conflict zones.

A good rule of thumb is to take twice as many photos as you need. This holds particularly true if you are under time pressure, as some images may be blurry or out of focus. In today's age of digital cameras and the ready availability of storage media, there is rarely a need to be conservative with photography. If you see markings—any markings—document them. You never know what may prove useful at a later date. Similarly, even if you are looking for specific arms or munitions, it may prove useful to document others you encounter.

Documenting prices of arms and munitions can be another important facet of fieldwork. Whenever possible, try to establish price ranges over a period of time (at least a few months, and preferably as far back as the beginning of the conflict and a few months prior). Such information can help analysts to assess the availability and demand for various weapons systems. You should also attempt to assess prices for similar items from multiple sources, in varying quantities, and from different types of suppliers (such as individual combatants, professional arms dealers, and businesses or groups).

Remember to account for local idiosyncrasies. For example, Arabic transliterations often write 'P' as 'B', potentially changing the names of arms: 'RPG' becomes 'RBG', 'PKM' becomes 'BKM', and so on. Note also that local fighters frequently give arms nicknames. Syrian rebels, for instance, referred to the Steyr AUG as the 'B44', a reference to keys pressed as a purchase code to buy this weapon in a popular computer game.¹² In Libya in 2012, the AK-103-2 that was seen in service on both sides of the conflict was referred to as the 'Israeli AK', due to a mistaken belief that Israel had supplied or produced the weapons.¹³

Adding context to photographs is essential when documenting arms and munitions. While you can make certain inferences by examining your surroundings, it is generally very useful to ask the custodian of a weapon questions such as the following:

- How, where, and when was the weapon obtained?
- How, where, and when was the weapon used?
- How common are arms or munitions of this type?
- How common is ammunition or magazines for the weapon?
- What are weapons like this worth in the conflict zone? Are they available for purchase?
- Are weapons being supplied from or to other countries?
- What kind of weapons are popular and why?

Photographic considerations

Most modern digital cameras will suffice for taking images of arms and munitions. You should be familiar with the macro function, if present, for taking images of

details such as cartridge headstamps. Attempt to photograph items in areas where the light is even throughout, so as not to render part of your composition too light or too dark. Try to avoid direct sunlight. For detail shots, particularly of markings or small features, consider moving items so that the lighting is even—but only if it is safe and appropriate to move them.

In some cases, you may want to make use of a tripod or brace your camera against a suitable item in order to steady it. This may be of particular use in low-light situations. Your camera's flash may be helpful in some circumstances, but it may wash out items if used incorrectly. When in doubt, take several photos both with and without flash. If you are using a mobile phone camera, apply the safety measure of first activating the airplane or flight mode. Check your images after taking them, to ensure they are clear and in focus. Retake the picture if the initial result is blurry.

Take photos on the highest resolution possible, in case you need to zoom in further or augment the photo at a later stage. Try to photograph an item against a light-coloured background. A reference item of known size (such as a ruler, BIC® lighter, CD, or a pack of cigarettes) can be included to give the image scale, if necessary; it is best to take several photos, both with and without the reference item.

Photographic record checklist

Following is a checklist for photographing small arms and light weapons for the purposes of identification and tracing. This list is not in priority order, nor is it exhaustive or specific to certain weapons. If you have limited time or opportunity to photograph a particular weapon, the most important photos to take would be a profile shot, and a photograph of markings on both sides of the main body (receiver, frame, or housing) of the weapon.

- Profile shot (left side)
- Profile shot (right side)
- Magazine(s)
- Muzzle and barrel (especially muzzle attachments)
- Weapon model or type markings
- Factory markings
- Serial number markings
- Selector markings
- Sight markings
- Proof marks
- Any additional weapon marks, including internal markings
- Any accessories or mounts
- Any markings on accessories or mounts
- Packaging
- Documentation
- Contextual photos of the user, storage facility, or surroundings

When it comes to photographing ammunition, the most essential shot to take is of the headstamp. A profile shot would be the next most useful, followed by photographs of other markings, packaging, and contextual photos of the user, storage facility, or surroundings. It is especially useful to take profile shots of ammunition—including fired cartridge cases—next to a ruler.

Photographs of ordnance should focus on a profile shot, as well as any markings (including coloured bands or symbols) or obvious physical characteristics (such as fins and fuses).

Photos of packaging should include the interior and exterior, with particular attention paid to markings.

Image storage

It is essential that you keep a back-up copy of your images to ensure that valuable time in the field is not wasted should you lose your storage media or suffer hard disk failure. Aim to have three copies of your work: one on your primary computer or device, a second on a portable hard drive or similar device, and a third on resilient media such as a DVD or ruggedized USB drive. If you are working with digital images, make as few changes as possible outside of improving image quality. Changes to colour, perspective, and so on can impede the identification process. If you do make such changes, be sure to keep copies of the original, unmodified images.

Copies, variants, and close derivatives. The original AK (*Avtomat Kalashnikova*), the later, ‘modernized’ AKM (*Avtomat Kalashnikova Modernizirovanniy*), and the AK’s further successors (see Figures 9a–9d) have been exported, produced under licence, copied, and modified throughout the world. Indeed, AK- and AKM-type weapons are probably the most widely copied arms in the world. Many countries have produced a wide range of derivatives, copies, and variants, including commercial copies and variants; nearly 200 producers have been identified to date (Ferguson and Jenzen-Jones, 2014). In addition to the examples listed in Table 1, copies, variants, and close derivatives have been produced in Ethiopia, Finland, India, Iraq, Myanmar, North Korea, Pakistan (specifically in the Khyber Pass region), Poland, Sudan, Sweden, Ukraine, United States, and elsewhere. Many semi-automatic variants have been imported into countries such as the United States.

Markings and differential identification. Markings vary widely (see Figures 11 and 12). Manufacturer markings, model designations, and serial numbers are usually found on the left side of the receiver and trunnion. The right side—including near the fire selector/safety lever—and top rear

Figures 9a–9d Examples of the AK-type rifle



Figure 9a A Russian AKM assault rifle.



Figure 9b A Chinese Type 56-1 assault rifle.



Figure 9c A Russian AK-74 assault rifle.



Figure 9d A Russian AK-105 assault rifle.

Source: Small Arms Survey

Table 1 Selected producers of copies, variants, and close derivatives of the AK rifle

Producing country	Copies, variants, and close derivatives
Bulgaria	AKK, AKKS, AKKN-47, AKKM, AKKMS, AK-47M1, AKS-47M1, AKS-47UF, AR-M1, AR-M2F, AR-M4F, AR-M7F, AR-M9, AR-SF, RKKS
China	Type 56, Type 56-1, Type 56-2, Type 56C, QBZ-56C, Type 66, Type 68, M22, AK-2000
former East Germany	MPI-KM, MPI-KS, MPI-KMS72, MPI-AK74N, MPI-AKS74N
Egypt	Maadi, Misr 7.62
Hungary	AMD-63, AMD-65, AMD-65M, AMP-69, NGM 5.56
Iran	KLF, KLS
Romania	md. 63 (AIM), md. 65 (AIMS)
former USSR/ Russian Federation	AK, AKS, AKM, AKMS, AK-74, AK-74N, AKS-74, AK-74M, AKS-74U, AKS-74UB, AK-101, AK-102, AK-103, AK-104, AK-105, RPK, RPKS, RPK-74, RPKS-74, RPK-74M, RPK-201, RPKM
former Yugoslavia/ Serbia	M64, M64A, M64B, M70, M70A, M70B1, M70AB2, M77B1, M76, M80

Note: This list of producers and models is in no way exhaustive.

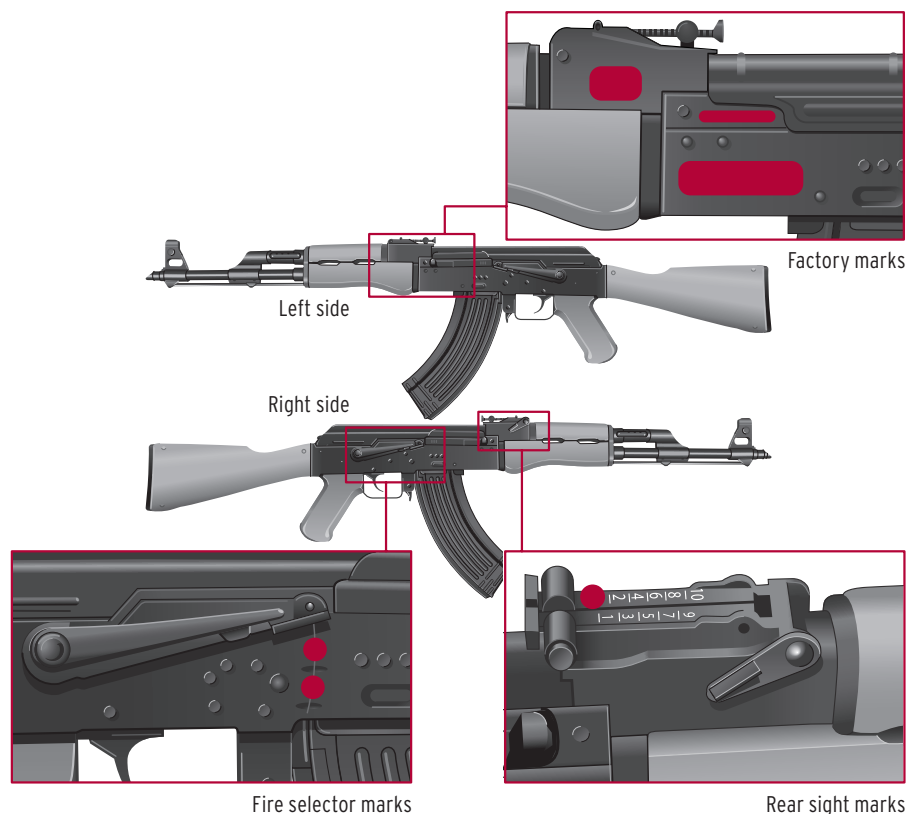
may have additional markings (see Figure 10). Rear sight markings may assist in determining origin. Magazines are often marked. Proof marks may be applied to the receiver, barrel, magazine housing, or other parts.

Unload and clear procedure. Following are steps for unloading and clearing a typical AK-type rifle. The combined safety and fire selector

lever is on the right side of the receiver. The magazine release catch is behind the magazine housing.

1. Ensure that the weapon is pointed in a safe direction, and that your finger is outside the trigger guard.
2. Remove the magazine (rock it forward with your thumb while pushing the magazine release catch).

Figure 10 Positions of identifying markings on AK-pattern weapons



Source: Adapted from Conflict Armament Research (2014)

Figure 11 **Common factory or manufacturer markings on AK-pattern weapons (non-exhaustive list)**

Mark	Origin	Mark	Origin
	Bulgaria (Factory 10, Arsenal, JSCo.)		Iraq (Al-Qadissiya Establishments)
	Bulgaria (Factory 21)		Iraq (arsenal mark)
	Bulgaria (Factory 25)		North Korea
she X	former Czechoslovakia		North Korea
	China (Factory 26, Chongquin)		North Korea
	China (Factory 36, Longyan)		Poland (Łuznik/Radom)
	China (Factory 36, Longyan)		Romania (Cugir)
	China (Factory 386, Shenzen)		Romania (Cugir)
	China (Factory 416, Quingdao)		Romania (Carfil)
	China (Factory 66)		Russian Federation (IZHMASH)
	Egypt (proof mark)		former USSR or Russian Federation (IZHMASH)
	former East Germany (Ernst Thaelmann VEB)		former USSR or Russian Federation (IZHMASH)
	former East Germany (Ernst Thaelmann VEB)		former USSR or Russian Federation (Tula)
	former East Germany (Ernst Thaelmann VEB)		former USSR (Tula)
	former East Germany		former USSR (Polyana)
	former East Germany		former Yugoslavia or Serbia (Zastava)
	former East Germany		

Source: Adapted from Bevan (2009), Conflict Armament Research (2014), and Jenzen-Jones (2014)

Figure 12 **Common fire selector and rear sight markings on AK-pattern weapons (non-exhaustive list)**

Fire selector markings				Rear sight markings	
Upper	Middle	Lower	Origin	Origin	Origin
	A	1	Albania	D	Albania
	L	D	Albania	П	Bulgaria
	AB	EА	Bulgaria	D	China
	天	单	China	ت	Egypt
	L	D	China	N	former East Germany
	ل	سرس	Egypt	A	Hungary
	D	E	former East Germany	П	North Korea
	∞	1	former East Germany	S	Poland
	Finland	P	Romania
	S	Y	Finland	П	Russian Federation
	∞	1	Hungary	O	former Yugoslavia
	س	س	Iraq		
	☰	☰	North Korea		
Z		O	Poland		
S	C	P	Poland		
S	1	3	Romania		
S	A	R	Romania		
S	FA	FF	Romania		
	AB	ОА	Russian Federation		
	ПП	О П	Russian Federation		
	ПР	ОГОНЬ	Russian Federation		
U	R	J	former Yugoslavia		

Source: Adapted from Conflict Armament Research (2014) and Jenzen-Jones (2014)

3. Move the selector lever to semi-automatic (the lowest position).
4. Pull back the cocking handle and hold the action open.
5. Inspect the chamber through the ejection port to ensure the weapon is clear.
6. Release the action.
7. Ensure the weapon is pointed in a safe direction and pull the trigger. ■

Notes

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1. Parts of this and the following sections have been adapted from Bevan (2009).
2. The full title is: International Instrument to Enable States to Identify and Trace, in a Timely and Reliable Manner, Illicit Small Arms and Light Weapons.
3. The full title is Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons in All Its Aspects.
4. The full title is Protocol against the Illicit Manufacturing of and Trafficking in Firearms, Their Parts and Components and Ammunition, Supplementing the United Nations Convention against Transnational Organized Crime.
5. Arms and munitions baselines also include known authorized transfers.
6. Such rounds visibly lack a primer and feature a visually recognizable means of verifying the absence of propellant (such as factory rounds with a fluted case or inert rounds with markings, such as a drilled hole or holes in the case). Brightly coloured, all-plastic dummy rounds are available in many calibres.
7. This Issue Brief does not cover unload and clear procedures for light weapons as they are often more complicated and occasionally more dangerous than those for small arms.
8. Some organizations categorize under-barrel grenade launchers and rifle grenades as small arms accessories. The Small Arms Survey considers under-barrel grenade launchers light weapons.

- 9 Note that the specific model shown is an *Avtomat Kalashnikova Modernizirovanniy* or AKM (modernized Kalashnikov automatic rifle).
- 10 The military, law enforcement, and armed groups often apply rack numbers to weapons as a basic form of registration.
- 11 The acronym, AKM, comes from the Russian *Avtomat Kalashnikova Modernizirovanniy*, meaning 'modernized Kalashnikov automatic rifle'.
- 12 Author interview with a confidential source in Syria, March 2012.
- 13 Author interview with a confidential source in Misrata, Libya, August 2012.
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About the Small Arms Survey

The Small Arms Survey is a global centre of excellence whose mandate is to generate impartial, evidence-based, and policy-relevant knowledge on all aspects of small arms and armed violence. It is the principal international source of expertise, information, and analysis on small arms and armed violence issues, and acts as a resource for governments, policy-makers, researchers, and civil society. It is located in Geneva, Switzerland, at the Graduate Institute of International and Development Studies.

The Survey has an international staff with expertise in security studies, political science, law, economics, development studies, sociology, and criminology, and collaborates with a network of researchers, partner institutions, non-governmental organizations, and governments in more than 50 countries.

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