

CHAPTER 7

Gathering Arms and Ammunition Data in the Field: Advice for Researchers

Introduction

Gathering data on arms and ammunition in the field is an important element of some types of investigation. Material proof of specific types of arms and ammunition can provide compelling evidence that specific stakeholders have (or have not) been involved in activities of interest, such as illicit arms trading, arms diversion, human rights abuses, or criminal acts. It can also help investigators understand what led to the events under investigation. Frequently, the collection of such evidence also provides insight into the military capabilities of belligerents.

Successful—and even, sometimes, unsuccessful—field investigations are rich sources of data. For journalists, field investigations often generate entirely new stories and support existing ones. Such work can capture the public imagination, bring attention to violations of international law, and highlight cases of arms diversion.¹⁷¹

Gathering data in the field has a number of inherent risks. The weapons themselves may pose a hazard. They may be loaded and ready to fire, in poor physical condition, or even booby-trapped. Additionally, the environment in which weapons of interest are encountered may be littered with explosive remnants of war (ERW), such as unexploded ordnance (UXO), abandoned or poorly stored munitions, landmines, and improvised explosive devices (IEDs). These hazards are often hidden, compounding the risk to field researchers. In some cases, journalists and other researchers may be subject to harassment, detention, or imprisonment by local authorities, who sometimes view the gathering of data on arms and ammunition as a threat to the state or to their own interests.

Thorough planning—particularly, developing a risk management plan—is therefore essential prior to deploying to a conflict-affected area. This planning includes becoming familiar with the groups involved in the fighting, the types of weapons and ammunition that are likely to be encountered, the orientation of the confrontation lines, and the acquisition and proper use of personal protective equipment (such as body armour) and communications devices. Therefore, verifiable consent and permission should be gained from the relevant persons prior to any data-gathering fieldwork.

¹⁷¹ See, for example, Chivers (2012a; 2012b).

Given the challenges of researching and reporting on arms and ammunition in the field, some organizations choose to deploy specialized teams, engage outside organizations or contractors, or train specialist personnel within existing teams.

While the ideal standard of evidence may be the physical retrieval of samples of arms and ammunition, this is often beyond the capabilities of many researchers, and of limited benefit to some organizations, such as news media. Moreover, there are often barriers to physically gathering samples, from simple safety matters, to national and international legislation, to the attitude of local authorities. Consequently, for many arms and munitions investigations (AMIs), it is essential to correctly record evidence in-situ.

Safety considerations

Journalists and researchers should, in general, avoid handling arms and ammunition wherever possible. Nevertheless, those involved in fieldwork should endeavour to learn the mechanical and handling characteristics of weapons likely to be encountered. Key safety considerations are:

- Treat all firearms as if they are loaded, and all ammunition as if they are live, until you have personally confirmed otherwise.
- Do not rely on a weapon's safety mechanism to prevent it from firing.
- Never assume that arms or ammunition are safe to handle until they have been inspected by a subject matter specialist such as an armourer, ammunition technical officer (ATO), or explosive ordnance disposal (EOD) technician. Armourers and other weapons specialists are generally best placed to advise on the safety of small arms and light weapons, as well as unfired ammunition. With live (fired or unfired) ordnance, EOD technicians and ATOs are often the best qualified people to advise.
- Anyone intending to handle arms or ammunition must receive appropriate safety training.

In addition to the safety considerations specific to arms and ammunition outlined below, there may be site-specific considerations. Journalists and researchers should conduct a full and informed appraisal of the local security situation before doing any field research related to arms. Factors to consider include:

- the presence of hostile state or non-state forces, criminals, or local populace;
- structural dangers (such as damaged buildings and engineering flaws);
- hazardous materials (such as chemical and radiological materials and devices, and toxic industrial chemicals and materials); and
- biohazards (such as toxins, decaying corpses and carcasses, and local diseases) (US Army, 2010).



Avoid handling arms unless absolutely necessary.

Small arms and light weapons

When possible:

- ensure that the ammunition source (magazine, clip, belt, or individual rounds) is removed from a weapon before handling it,
- ask the weapon's owner to unload the weapon for you, and confirm it is unloaded; and
- always ensure that the weapon is pointed in a safe direction (away from yourself and others) during all unload and clear procedures (see Box 7.1).

When handling firearms, remember, at a minimum, the four 'golden rules' of firearms safety:¹⁷²

1. Always treat the weapon as if it were loaded.
2. Always keep the muzzle of the weapon pointed in a safe direction.
3. Always keep your finger off the trigger unless you intend to fire the weapon or perform a required function check.
4. Always keep the weapon unloaded unless you intend to fire it. If you need to check the function of the weapon with ammunition, use drill or dummy rounds instead of live ammunition.¹⁷³

¹⁷² There are two key risks to handling a firearm of unknown provenance: (1) Risk of accidental discharge. Solution: Know how to make safe and/or unload weapon safely. (2) Risk of catastrophic event during firing due to poor build quality, damage, storage, condition, etc. Solution: Do not fire a firearm unless absolutely essential.

¹⁷³ The primer and propellant should be visibly absent or inert in drill and dummy rounds. They should consist of factory rounds with a fluted case, or inert rounds with a drilled case (see Chapter 4).

Box 7.1 Unload and clear procedures

The basic unload and clear procedure for unloading firearms and rendering them safe to handle is outlined below. It is important to note that this explanation is provided as a guide only: wherever practicable, unload and clear procedures should only be attempted by properly trained personnel. Unload and clear procedures for light weapons are not included in the text below, as they are often more complicated than comparable procedures for small arms and, in some cases, pose a considerably higher risk.

When possible, you should ask the owner of a weapon to unload it for you, and then confirm the weapon is unloaded before handling it. If it is necessary to unload a weapon yourself, ask the owner's permission before doing so. Always remember to make a visual and tactile inspection of the weapon to confirm it is safe to handle.

If you must unload and clear a weapon, and you do not have the correct, step-by-step instructions from the manufacturer or another credible source, remember these three basic steps:

1. Remove the ammunition source from the weapon. The ammunition source may be a magazine, clip, belt, or individual rounds.
2. Cycle the weapon's action (by using the cocking handle(s), bolt handle, or similar weapon feature) and, where possible, hold the action open.
3. Visually inspect the weapon's chamber, magazine housing, feed ramps, and other areas that feed live ammunition to ensure that they are clear.

If possible, these three steps should be followed with a weapon's safety mechanism(s) engaged.



Wherever possible, avoid handling arms unless properly trained.

Explosive ordnance

Munitions that contain a high-explosive (HE) fill are considered to be 'explosive ordnance'. Explosive ordnance includes many types of ammunition for light weapons (see Chapter 5). When in doubt, treat suspect ammunition as explosive ordnance, and act accordingly. Explosive ordnance is most commonly encountered in the form of projectiles (fired from a weapon system that has a barrel), rockets or missiles (that use a rocket motor for propulsion), or manually-employed ordnance such as hand grenades or landmines. In a conflict-affected environment, you may encounter ERW. ERW refers to both abandoned explosive ordnance and unexploded ordnance (IMAS, 2003). Other types of ordnance may be encountered, including emplaced landmines, booby traps, and IEDs.

- **Abandoned explosive ordnance (AXO)** is explosive ordnance that has not been used during armed conflict, has been left behind, and is no longer under the control of the party that abandoned it. Such ordnance may or may not have been primed, fused, armed, or otherwise prepared for use (UN, 1980; IMAS, 2003).
- **Unexploded ordnance (UXO)** refers to ordnance (rockets, projectiles, hand grenades, and others) that have been used but failed to detonate as intended (IMAS, 2003). Failure rates may be as low as one or two per cent, or as high as 30 to 40 per cent, depending on a range of factors, such as the quality of original manufacture, the age of the weapon, storage conditions, the method of employment, and environmental conditions.
- **Landmines and booby traps** are munitions that have been placed, buried, dropped, thrown, or otherwise deployed with the intention of harming or hindering personnel or vehicles near the device. Many landmines and booby traps are unintentionally triggered (or initiated) by the victim(s) (UN, 1980).
- **Submunitions** are smaller explosive munitions that are scattered from larger carrier/cargo rounds. The majority of cargo rounds are either fired from the ground or dropped from the air. Many submunitions have unreliable fusing systems and can remain hazardous for extended periods of time.
- **Improvised explosive devices (IEDs)** are ordnance items made in an improvised manner that incorporate explosive, noxious, pyrotechnic, or incendiary chemicals and are designed to destroy, incapacitate, harass, or distract. They may incorporate factory-produced ordnance but often include non-military components (NATO, 2018, 4.3).

Untrained and inexperienced persons should never touch or handle explosive ordnance. If the aim is to gather data that requires the handling of ordnance, the researcher should seek appropriate training or be accompanied by a suitably trained person or team.

Should you encounter ERW, remember the ARMS acronym:

AVOID the area.

RECORD all relevant information from a safe distance.

MARK the area to warn others.

SEED assistance from the relevant authorities.

Ordnance and, in particular unexploded ordnance, is dangerous. Where possible, follow these rules:

- First and foremost, do not touch arms and ammunition unless absolutely necessary. Never handle unexploded ordnance.
- Try to avoid approaching ordnance encountered in the field wherever possible. Use optics to examine a suspected unexploded item from a distance. Camera zoom lenses, binoculars, and spotting scopes are all excellent tools for examining these items from a safe distance.
- If you must approach ordnance, do so at a 45 degree angle from the rear of the item.
- If you notice submunitions or landmines, assume that there are more in the area around you.
- If an item is fused and has been armed, fired, or damaged, it may be particularly hazardous. Many ordnance items include firing delays and sensors that could cause the item to detonate if approached.
- Do not be the first to open boxes or handle arms and ammunition found in combat zones, and beware of boxes and ordnance that appear to be altered, as they may have been placed as booby traps.
- Submunitions are particularly dangerous when encountered outside of packaging or their cargo munition. Do not approach or handle submunitions.

Cartridge-based ammunition

While small arms ammunition generally poses a lower risk than many other items you may encounter in the field, larger cartridge-based ammunition can be particularly dangerous. Do not approach or handle these items if:

- the cartridge has an overall length of more than 160 mm;
- the cartridge is larger than 14.5 mm in calibre;¹⁷⁴ or
- the projectile is completely painted (ARES, 2018).

¹⁷⁴ It is important to note that there are limited examples of smaller calibre ammunition containing high explosives, either as part of the projectile, or in a booby-trapped condition. See, for example, Jenzen-Jones (2014b). All ammunition should be handled with caution.

Principal tools and practices for field research on small arms and light weapons

Fieldwork takes place under a variety of conditions, from crime scenes to active conflict zones. While these circumstances all pose different challenges to an investigator, there are some general techniques that may prove useful under most conditions.

Fieldwork techniques

Depending on the area in which you are working, your affiliation, and the security situation, attempting to document arms may pose a security risk. You should make an informed assessment of the security situation before approaching combatants and seeking to document weapons. In many cases, such work is better conducted indoors, away from passers-by and civilians. However, you should not handle or move explosive remnants of war under any circumstances.

If you rely on the permission and assistance of combatants in order to conduct your work (as many journalists or non-governmental organizations (NGOs) conducting fieldwork do), you may need to convince these individuals of the importance of your work and of their assistance. If you record their name and details, or take a photo of them, you should clearly indicate how you intend to use the information or images. In most cases, there is no need to link information about arms or ammunition to their owners and it is thus possible to protect the identity of these individuals. This should be explained to anyone whose arms or ammunition you intend to record (photographically or otherwise).

If you are looking for particular arms or ammunition in a given area, you may find it useful to carry a 'scrapbook' (hard copy and/or electronic) of images of these items to show to people in the area who are less familiar with arms. Ahead of time, it is also a good idea to research local names and terminology for certain arms, and to familiarize yourself with the identification characteristics of weapons in the region. Several organizations produce reports and maintain blogs identifying arms and ammunition documented in current conflict zones, including the Small Arms Survey and Armament Research Services (ARES).

When documenting weapons, 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 out of frame or focus. In the age of digital cameras and

the ready availability of storage media for them, there is rarely a need to limit the number of photos taken. If you see markings—any markings—photograph and write all of them down. Even seemingly insignificant markings often prove useful. Similarly, even if you are looking for specific arms or ammunition, you should document others you encounter, when practicable. These items may be significant for reasons that are not immediately evident.

Documenting the prices of arms and ammunition is another important facet of fieldwork. When possible, collect price data over an extended period of time (at least a few months, and preferably before the outbreak of hostilities or other key events). Data on pricing is often useful for analysing the availability and demand for various weapons. Where possible, collect price data for the same make, model, or type of items from multiple sources. Data on the unit cost of the items when sold in varying quantities, and the prices charged by different types of suppliers (individuals, professional arms dealers, businesses or groups, etc.), is also useful.

Remember to account for local idiosyncrasies in language, including how arms are classified and described. For example, the lack of a ‘p’ in the Arabic alphabet can result in ‘RPG’ becoming ‘RBG’, or ‘PKM’ becoming ‘BKM’, etc. Additionally, local fighters frequently give arms nicknames for one reason or another. For example, Syrian rebels referred to the Steyr AUG as the ‘B44’, a reference to keystrokes used to purchase this weapon in a popular computer game. In Libya in 2012, the AK-103-2 that was seen in service with 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.¹⁷⁵

Site exploitation

Site exploitation (SE) is a systematic search and collection effort designed to gather primary intelligence based on information, material, and persons found at a designated location (US Army, 2010).¹⁷⁶ Site exploitation is conducted to produce a news article or intelligence report, facilitate customs or law enforcement seizures

¹⁷⁵ Interviews with ARES personnel.

¹⁷⁶ Sometimes differentiated as ‘tactical site exploitation’ (TSE) and ‘sensitive site exploitation’ (SSE) in military and law enforcement usage. TSE is sometimes considered to be a field expedient, rapid approach in comparison to the more nuanced procedures followed under SSE (Dawson, 2009).

of arms and ammunition, or support criminal prosecutions, among other reasons (ARES, 2016d).

There are a number of site exploitation and field investigation training courses that are provided to investigators within professional and governmental organizations, or from private companies. Even a short three-day course can greatly enhance investigative skills by introducing the participants to key evidence, privacy, and safety considerations; and by bolstering personal or institutional credibility.

The procedures applied during site exploitation will vary with the purpose of the field research. Chain of custody standards relating to the transfer of possession of evidence (along with other legal considerations), for example, are much stricter for criminal prosecutions than for most intelligence outputs, or for general research and reporting purposes.¹⁷⁷ The timeline for exploitation may also change substantially, depending on circumstances. Law enforcement often has several days to process a crime scene, whereas the time available for site exploitation in conflict areas may be limited to hours or minutes. While site exploitation is best conducted by a team of investigators, individuals may sometimes need to collect evidence on their own. As noted above, researchers should obtain appropriate training from their organization or elsewhere before engaging in site exploitation.

Researchers should be aware of the possible ramifications of contaminating a crime scene or disturbing evidence. Anyone engaging in these activities will ultimately need to take personal and, as relevant, organizational responsibility for the decision to access crime or conflict areas and document arms and ammunition. If items are moved—either to allow for better photography, or for evidentiary or other purposes—additional factors must be considered.

The following basic principles of site exploitation are adapted from an ARES training module, and are presented as an introductory overview only.

Searching the site

Site exploitation provides access to three broad categories of primary intelligence:

- **information** gathered from physical documents, books and manuals, computer hard drives, external storage devices, and other media;

¹⁷⁷ See, for example, van Ginkel (2012); Roach (2009).

- **materiel**, including weapons, ammunition, equipment, chemicals, and supplies; and
- **persons** including witnesses, victims, and others.

These primary sources are known by the acronym IMP (information, materiel, and persons) (US Army, 2010).¹⁷⁸

Basic site searches consist of the following steps:

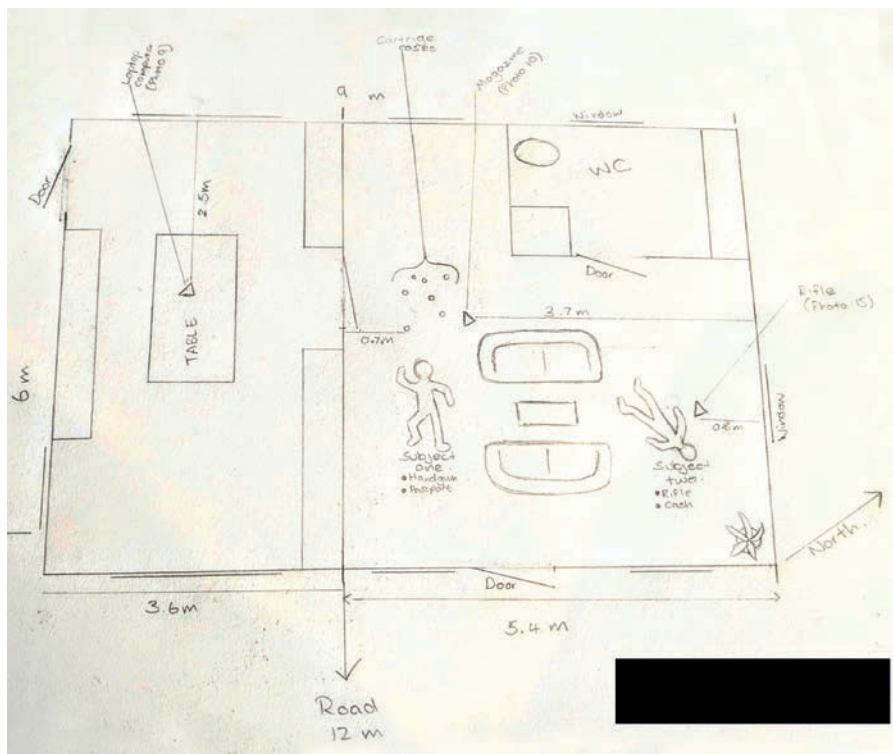
- Conduct a risk assessment.
- Identify safety hazards.
- Search the area to locate primary intelligence sources (IMP).
- Document the site and evidence.
- Question human intelligence sources.
- Conduct further forensic collection, if applicable (ARES, 2016d).

Before applying invasive search techniques, investigators should thoroughly document the site. The purpose, sensitivity, and significance of the site should be assessed. In addition to extensive photography of the site and the gathering of relevant intelligence, the following four practices may also be helpful.

A **sketch** of the area under investigation can prove very useful when attempting to recreate the scene from photographs at a later date, and for recording important dimensions (see Image 7.1). Sketches are used to assist in recalling the layout of a scene. The sketch should support the photographs, with items drawn appropriately sized, but not necessarily exactly to scale. A sketch should show where evidence was found in relation to the area of investigation, including the physical address and GPS coordinates of the area. The researcher may also consider drawing a grid, so as to quickly identify areas of the scene in question. Reference landmarks may also be included. Sketches should always be digitized (scanned or photographed in high resolution) in case the original is lost or damaged. Under field conditions, even a quick photograph of a site sketch is better than none at all. Alternatively, some mobile devices have softwares that can be

¹⁷⁸ Other specialists with experience in technical intelligence (TECHINT) exploitation, post-blast analysis, EOD, human intelligence collection/interrogation, or forensic collection may be present or available in some circumstances, and this may expand the scope and goals of the collections effort accordingly.

Image 7.1 A hand-drawn site exploitation sketch



Source: Bethany Granton/ARES

used for this purpose, although sketching on phone or computer screens is often more time consuming and less accurate than a quick, hand-drawn sketch.¹⁷⁹

In Image 7.1, an investigator has sketched a site where two bodies and relevant intelligence sources (firearms, a magazine, fired cartridge cases, passports, cash, and a laptop computer) were recovered. The sketch is quite good, including a cardinal direction (north), reference walls (walls of known/measured length), doors and windows, locations of recovered evidence (including the distance from nearest reference wall), distance to landmarks (road), and references to photos of the evidence items. The redacted (blacked-out) portion at bottom right also contained information on location, including GPS coordinates, and identified the

¹⁷⁹ For further information on data recording during site exploitation, see ARES (2016d).

author of the sketch (ARES, 2016d). The sketch could be improved by linking it more closely to photographs of the scene. For example, if photographs were taken from each corner of the rooms, the photograph numbers could be labelled on the sketch, and photographs of all evidence items and bodies could be listed.

In addition to a sketch, taking a **digital video** of the scene is an excellent way to show the relationship between evidence items, and serves as a backup inventory of the items. The video does not need to be overly long or attempt to identify the weapons in a single cut, but should capture all items present. A digital video also helps to show that investigators have sought to preserve the scene. Generally, the same principles apply to videography as to photography: items should be clear, in focus, and well lit where possible. Ideally, video should be shot in landscape format.

Interviews with relevant persons ('human intelligence sources') are another important source of information about arms and ammunition. Interviews are often conducted through an interpreter, who may need to be briefed on relevant arms-related terminology, if they are not already familiar with it.

Context is essential when documenting arms and ammunition. Some relevant information can be inferred by examining your surroundings, but it is often useful to ask the possessor or owner of a weapon for details about the weapons (assuming it is safe to do so). Possible questions include the following:

- How, where, and when did the possessor/owner obtain their weapon?
- How, where, and when was the weapon used?
- How common are arms of this type?
- How common are magazines or ammunition for the weapon?
- What are weapons like this worth in the conflict zone? Are they available for purchase?
- Do they know of weapons being supplied from or sent to other countries?
- What kinds of weapons are popular, and why?

Legal and forensic considerations

In addition to the safety and intelligence gathering considerations outlined in this chapter, there are often legal and forensic considerations which must be taken into account before documenting arms and ammunition under field conditions. Researchers are advised to make a full and informed appraisal of the local secu-

rity situation—including potential legal or administrative restrictions—before conducting any research related to arms or ammunition. These considerations will vary with the nature of the research and the area in which it is being conducted. In many jurisdictions, entering any crime scene without permission, for example, may be prohibited and carries a hefty penalty. In certain conflict situations, however, field researchers may be the only way that investigators can document particular items or events. In all cases, researchers should follow the policies and procedures established by their organization, and adhere to applicable local, national, and international laws and regulations.

As a general rule, refrain from touching or removing items. If items must be moved, wear non-porous gloves (latex or nitrile are commonly available; nitrile is less prone to causing allergic reactions). Evidence should be placed in sealed bags, and steps should be taken to preserve it. If items are to be used as evidence, then chain of custody and evidence storage procedures should be established and followed. While these procedures are largely beyond the scope of this Handbook, the following information should at least be collected:

- time, date, and location where evidence was gathered;
- reason evidence was collected (case file number, etc.);
- other administrative data (item number, investigator ID, etc.);
- description of the item in question;
- information on the chain of custody (ARES, 2016d).

At any point, one individual will have control (custody) of a given piece of evidence. When any change in custody occurs, the individual in control of the evidence at that time should note the change in custody on a form accompanying the item and, ideally, on a master chain of custody record sheet. Acknowledging the change with the signatures of both parties is good practice. Evidence should also be stored in a secure location. Under field conditions, this may include a hotel safe, locked vehicle, or a similarly expedient solution.

Potential sensitivities regarding arms and ammunition information gathering

Gathering information about arms and ammunition can be a sensitive and potentially perilous undertaking. Of particular concern are situations in which:

- parties in possession of the items in question assume that a researcher is acting as an intelligence gatherer for opposing forces or other hostile parties;
- the item in question is part of a covert nation state programme to arm the recipients, making the possessor reluctant to allow documentation of the item;
- possession of the item in question is a violation of ceasefire terms or arms limitations negotiated between the parties in question;
- subgroups of an armed party to the conflict have access to limited stocks of more effective or prestigious items than the parent organization, potentially causing friction between the groups if the parent organization learns of these stocks;
- the item in question is related to activities that the possessor wishes to conceal, such as criminal acts or covert operations;
- the quality or lack of certain arms and ammunition is interpreted as a lack of resourcing and causes a group to lose a tactical advantage, prestige, or negotiating position.

In such cases, investigators should carefully consider whether interviewing the source in question is advisable.

Photographic considerations

In broad terms, most modern digital cameras will suffice for taking images of arms and ammunition. Photographs should:

- be clear, sharp, and free of distortion;
- be taken from a stable position;
- include the date, time, and location when photographs were taken (digital cameras should be correctly programmed for the date and time) (ARES, 2016d).

At the most basic level, you should 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. Direct sunlight should be avoided, where possible. You should be familiar with the macro function, where present, for taking images of small details such as cartridge headstamps.

Where necessary, you may want to use a tripod, or, when a tripod is unavailable, brace your camera against a suitable item to steady it. Steadying the camera is particularly helpful in low light situations. Your camera's flash may be useful

in some circumstances but may wash out items if improperly employed. When in doubt, take several photos both with and without the flash. If using a digital camera, always check your images after taking them to ensure they are clear and in focus.

Photographic record checklist

Below is a checklist for photographing small arms and light weapons for the purposes of identification. This list is not in order of priority, 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 are a profile shot, and a photograph of markings on both sides of the main body (receiver, frame, or housing) of the weapon (see Figure 7.1).

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

When photographing ammunition, the most essential photo to take is of the headstamp. An image of the profile is the next most useful, followed by photographs of other markings, packaging, and contextual photos of the user, storage facility, or surroundings. Photographs of ordnance should include a profile shot, as well as any markings (including coloured bands or symbols) or obvious phys-

ical characteristics (fins, fuses, etc.). Photos of packaging should include the interior and exterior, with particular attention paid to markings. When items of interest are located in a container, hiding place, or vehicle, images should be taken to provide proper context (CALL, 2007, pp.63–68; ARES, 2016d).

To document scale, a photographic point of reference such as a small ruler with high-contrast markings is ideal.¹⁸⁰ Other household items that are useful for this purpose include, but are not limited to, common cigarette lighter designs, packs of cigarettes, and CDs. Regardless of which item is used, the photographer should record the measurements of the item. It is best to take several photos both with and without the points of reference.

In addition to photographing the arms, ammunition, and other items identified above, take photos of:

- the entire area or room containing evidence (when possible, take a 360-degree exposure of the four corners of the room);
- each piece of suspected evidence, with and without the point of reference (small ruler etc.);
- a reference point for calculating the physical dimensions of the site, building, and any items collected,¹⁸¹ and
- a broad point of view that establishes the location of arms and ammunition by including landmarks or reference points (ARES, 2016d; CALL, 2007, pp. 63–68).¹⁸²

Storing your images

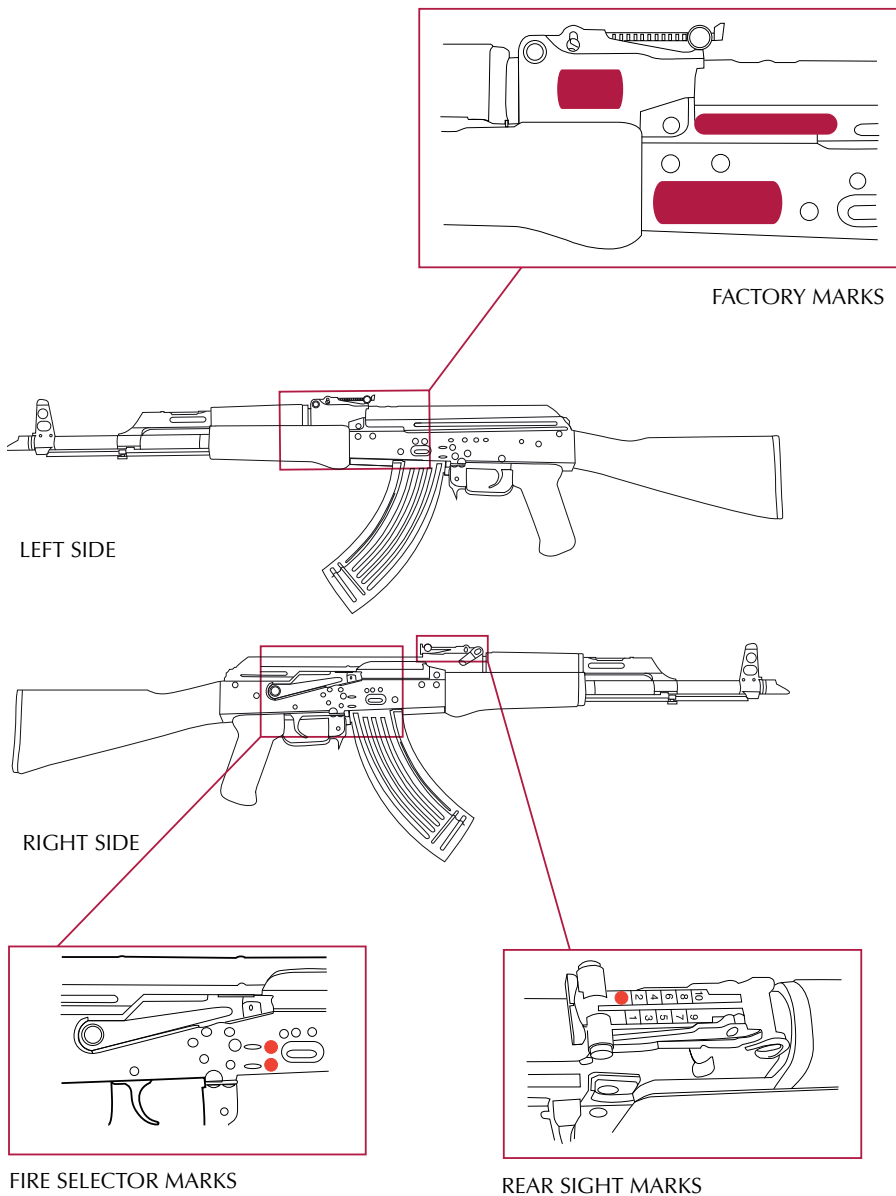
It is essential that you keep a backup copy of your images to ensure that valuable data collected in the field is not lost because of misplaced storage devices or hard disk failure. Three copies of important information is generally a good standard—one saved on your primary computer or device, a second on a portable hard drive or similar device, and a third on resilient media such as a DVD or ruggedized

180 This is sometimes known as a ‘photographic fiduciary’ or ‘forensic reference’.

181 Such images may prove useful for photogrammetry and other purposes. See, for example, Jespersen (forthcoming).

182 In certain circumstances you may also want to take photographs of people; however, this comes with attendant privacy protection and legal considerations. Your organization should provide guidance in this matter.

Figure 7.1 Markings on AK-type rifles



Source: ARES

USB drive. Data can also be backed up to the Cloud, but doing so may pose security concerns that should be carefully assessed. If you are working with digital images, make as few changes as possible. Changes to colour and perspective, for example, can impede the identification process. In any case, you should always keep copies of the original, unmodified images for data verification purposes.

Case study: AK-103 and F2000 self-loading rifles in Gaza¹⁸³

1. Lead generated from open-source intelligence

On 2 October 2012, the al-Quds Brigades, the armed wing of Palestinian Islamic Jihad, held its annual military parade in Southern Gaza to mark the 17th anniversary of the assassination of the group's founder, Fathi al-Shaqaqi. The group often uses these parades to display its latest arms and ammunition acquisitions. In 2012, among the usual assortment of Soviet- and Chinese-designed rifles and machine guns were two self-loading rifles not previously documented in Gaza: the Belgian F2000 (see Image 7.2) and the Russian AK-103. These two rifles, which are relatively modern and had rarely been seen together in the hands of a single fighting force, constituted significant 'flag items'—items that are likely to provide ready indicators of diversion or other illicit activity.

2. Preliminary identification

Analysts from ARES became aware of these rifles shortly after the parade and conducted a preliminary analysis. The F2000, being visually distinct from other self-loading rifles, proved easy to identify. While there are airsoft and non-firing replicas of these weapons, physical characteristics of the F2000 rifles—and the group displaying them—made it likely that these were lethal-purpose weapons. The AK-103 required additional analysis. The rifle is one of the so-called 'AK-100' series of rifles, designed and introduced by the Russian company IZHMAASH (now Kalashnikov Concern) in the early 1990s.¹⁸⁴ Its mechanical design—and

¹⁸³ This case study is adapted from Jenzen-Jones (2015e) and Jenzen-Jones (2016c).

¹⁸⁴ The so-called AK-100 series is generally considered to be comprised of the AK-74M, AK-101, AK-102, AK-103, AK-104, and AK-105. There is no rifle designated the 'AK-100' (Ferguson and Jenzen-Jones, 2014b). Further developments include rifles such as the AK-9, chambered for 9 × 39 mm (Jenzen-Jones, 2012a).

Image 7.2 Palestinian Islamic Jihad al-Quds Brigades member with Belgian FN Herstal F2000 self-loading rifle, fitted with LG1 under-barrel grenade launcher, in Gaza, 2 October 2012



Source: Palestinian Islamic Jihad al-Quds Brigades

general appearance—is very similar to the AKM, an updated AK series rifle introduced in 1959, and other AK-type rifles (Jenzen-Jones, 2012a; Ferguson and Jenzen-Jones, 2014b).

None of the markings on the AK-103s were visible in the early images from Gaza, so analysts had to identify the rifles by their physical characteristics alone. The AK-100 series rifles are visually distinctive from earlier models of AK-type rifles, allowing analysts to rule out all but six models: the AK-74M, AK-101, AK-102, AK-103, AK-104, and AK-105. These models share several key physical characteristics, including the same black synthetic furniture and magazines, and black phosphate finish on metal parts. Analysts then compared the barrel length and muzzle devices of the six rifles, which shortened the list of possible matches to three models: the AK-74M, AK-101, and AK-103. These models have barrels that are roughly 100 mm longer than the AK-102, AK-104, and AK-105, which also have distinctive muzzle devices (Jenzen-Jones, 2012a).

Distinguishing between the three remaining models was more difficult. All are full-length rifles in the AK-100 series and are fitted with the same muzzle

brake, side-folding solid polymer stock, and left-hand side optical sight rail (Ferguson and Jenzen-Jones, 2014b). A feature-by-feature comparison was required to identify the model of the rifle.

3. Achieving positive identification

The key feature that readily distinguishes the AK-103 from other AK-100 series rifles is the distinctive profile of its magazines (see Image 7.3). Unlike the AK-101 (top) and AK-74M (centre) which are chambered for cartridges with minimally-tapered cases, the AK-103 (bottom) is chambered for the 7.62 × 39 mm cartridge, which are held in a magazine with a much more curved profile. Note the relative proximity of the blue and green lines, compared to the pink, and the distinctive ‘banana’ shape of the AK-103 box magazine.

Image 7.3 Comparative study of AK-101 (top) with magazine profile marked in purple, AK-74M (centre) with magazine profile marked in yellow, and AK-103 (bottom) with magazine profile marked in grey¹⁸⁵



Sources: Rob Stott; Concern Kalashnikov

¹⁸⁵ There is minor image distortion and perspective difference between the three source images, so this image should not be considered perfectly precise. Nonetheless, it remains indicative of the difference in magazine profiles between the three rifles.

Available images did not allow analysts to determine whether the rifles were the more common AK-103 model, or AK-103-2 variants. Distinguishing an AK-103 from an AK-103-2 requires an examination of a rifle's markings or internal components, which were not visible in the earliest available images from Gaza (ARES, n.d.). The analysts needed more information about the rifles but there was no guarantee that Gazan militants would post additional photos, let alone photos of the markings. With limited resources to reach out to sources in Gaza, the analysts had to look elsewhere. The most likely source of the additional information was Libya, where both the AK-103-2 and the F2000 had recently been documented.

4. Identifying the variant of the AK-103, and the source of the rifles

Analysts then sought to conclusively determine whether the F2000 and AK-103 rifles in Gaza had been trafficked out of Libya. To that end, ARES attempted to: (1) confirm the variant of the AK-103 rifles in Libya; (2) determine whether Libya was the source of the AK-103 and F2000 rifles spotted in Gaza; and (3) identify the point at which the rifles were diverted into the illicit sphere.

Analysts, including a native Libyan Arabic speaker, sought more information regarding these weapons from well-placed individuals in Libya. They conducted numerous interviews with these and other sources, including international specialists, and obtained images of AK-103 and F2000 rifles from individuals connected to the black market arms trade, including the online black market. Several of these images showed detailed markings and serial numbers (ARES, n.d.). The markings revealed that the AK-103 rifles in Libya were the AK-103-2 variant.

The serial numbers were then compared to existing photographic and documentary evidence held by ARES. This allowed analysts to confirm that the photographed examples were part of the original contracts and shipments known to ARES. In the case of both rifle models, the weapons in question were part of authorized exports to the Libyan government (Jenzen-Jones, 2016c).

Analysts then attempted to determine whether the rifles in Gaza came from Libya and, if so, how they ended up in the hands of Gazan militants. Interviews with individuals in Libya were a key part of this process. Ali,¹⁸⁶ a former student who joined the rebel movement during the 2011 Civil War, told ARES how he and a group of young fighters he led came across a large, strange-looking rifle

¹⁸⁶ All names used in this case study are pseudonymous, to protect sources in Libya.

Image 7.4 Ali and his fellow fighters during the 2011 Libyan Civil War



Note: Left and centre: F2000 self-loading rifles; second from right: AK-103-2.

Source: ARES/confidential source

known to them as ‘the French FN’ (see Image 7.4). They had seized two of them from retreating loyalist forces on the southern outskirts of Sabha in September 2011. Ali explained:

We had a checkpoint just outside of Sabha. A car came up and the window rolled down. The man told us he was an officer from the 32nd Brigade and we were to let them past. We didn't have any revolutionary flags at the time, so maybe they thought we were with Gaddafi's forces.

In total, Ali's unit seized two F2000 and two AK-103-2 rifles.

At the end of the 2011 Civil War, some of the captured AK-103-2 and F2000 rifles found their way north, to the port city of Misrata. Ali handed over his F2000 to the new government, and another fighter named Marwan turned over two AK-103-2 rifles. However, many combatants kept their weapons, while others sold them or traded them for more concealable weapons such as handguns. Khaled, another individual interviewed by ARES, operated a successful black market arms business in Misrata. Khaled told ARES that he was directly responsible for the shipment of AK-103-2 and F2000 rifles to Gaza. ‘We sent them to help the people of Gaza,’ he said. The weapons in question were not sold, but gifted to a contact in Gaza to demonstrate solidarity against Israel. Just as the Belgian FN Herstal F2000 had been widely misidentified by Libyan rebels as the ‘French FN’, the AK-103-2 was widely known in 2012 as the ‘Israeli Kalashnikov’. The analysts had their answer: the rifles spotted in Gaza had indeed come from Libya.

5. Mapping the chain of custody

Earlier investigations into the presence of these weapons in Libya had turned up multiple images of packaging crates from different sources, including newspaper accounts, social media, and confidential sources in Libya. These images showed contract numbers and shipping information for the AK-103 rifles, which, in turn, allowed analysts to more fully map the chain of custody of the weapons.

Of particular interest were Russian and Belgian shipping documents obtained by Human Rights Watch in 2011 and provided to ARES in 2012. The contract numbers on the Russian shipping documents matched those on the packaging crates for AK-103 rifles. These sources reveal that the AK-103 rifles were part of a sizeable arms deal between Russia and Libya concluded in late 2003 or early 2004. The rifles were delivered from 2004 onwards. The F2000 rifles formed part of a smaller, but still significant, arms deal between Belgium and Libya, which was signed in May 2008 and completed in 2009. The shipping documents and images of the packing crates were the final pieces of the puzzle. Starting with a few photos of unusual rifles displayed during a military parade, the analysts were able to not only identify the make and model of the weapons but also trace their circuitous, multi-year journey from factories in the Russian Federation and Belgium to the streets of Gaza (see Map 7.1).

6. Assessing further proliferation and providing context

At the same time that analysts were conducting interviews to determine trafficking routes of the rifles displayed by the Palestinian Islamic Jihad, ARES was also gathering additional information about the proliferation of these rifles in Gaza and other parts of the Middle East and North Africa (see Map 7.1). This research revealed further proliferation of both the AK-103 and F2000 rifles.¹⁸⁷ Fighters from the armed wings of Hamas, the Democratic Front for the Liberation of Palestine (DFLP), and the Popular Resistance Committees (PRC) have also been pictured with AK-103 type rifles on numerous occasions (see Images 7.5 and 7.6). Several of the rifles were also identified in the hands of members of the Preventive Security Force of the Palestinian National Authority. In a small number of cases, AK-103-2 variant rifles were identified (ARES, n.d.).

¹⁸⁷ The Palestinian Islamic Jihad's al-Quds Brigade have continued to parade these weapons; both the AK-103 and F2000 were concurrently documented in their possession during a parade in August 2015, for example.

Image 7.5 An AK-103 rifle in the hands of a militant from the National Resistance Brigades of the Democratic Front for the Liberation of Palestine, Gaza, 2014



Source: DFLP

Image 7.6 The same model of rifle with militants from the 'naval commando' unit of the Izz ad-Din al-Qassam Brigades of Hamas in Gaza, 2014



Source: Mahmud Hams/AFP Photo

Image 7.7 AK-103 rifles in the hands of Islamic State fighters in Libya, 2015¹⁸⁸



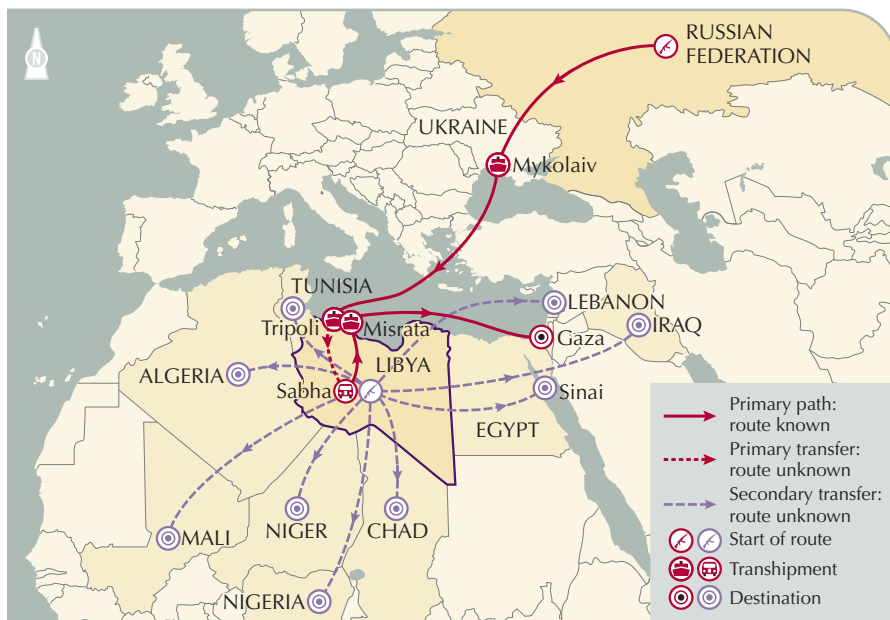
Image 7.8 AK-103-2 rifle documented for sale via social media in Iraq, 2016



Source: ARES/confidential source

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188 Source withheld

Map 7.1 Mapping the proliferation of AK-103 type rifles connected to Libya



Source: Jenzen-Jones (2016c); ARES (n.d.)

Reports from the UN Panel of Experts on Libya indicate that AK-103 rifles have also been documented in Mali, Tunisia, and Niger (see Map 7.1). Islamic State forces in Libya have also made use of the AK-103; several were visible in a video showing the execution of Ethiopian Christians in Libya in 2015 (Image 7:7). Subsequent ARES investigations have turned up AK-103 type rifles, including AK-103-2 models, in Algeria, Chad, Egypt, Iraq, Lebanon, Mali, Niger, Nigeria, and Tunisia (ARES, 2016a; 2016b; Jenzen-Jones, 2016b; see Image 7.8). F2000 rifles were documented in the hands of militants in Egypt's Sinai Peninsula in 2015. As with the F2000 rifles documented in Gaza, they were fitted with 40 × 46SR mm LG₁ under-barrel grenade launchers. Given their distinctive physical appearance and relative scarcity in many areas, these rifles will continue to constitute flag items for investigators examining current and future conflicts.

— Author: N.R. Jenzen-Jones

