

TECHNICAL NOTE CRIMINALISTICS

Abigail G. Hannam,¹ M.Sc.

Trends in Converted Firearms in England & Wales as Identified by the National Firearms Forensic Intelligence Database (NFFID) Between September 2003 and September 2008

ABSTRACT: The National Firearms Forensic Intelligence Database (NFFID © Crown Copyright 2003-2008) was developed by The Forensic Science Service (FSS) as an investigative tool for collating and comparing information from items submitted to the FSS to provide intelligence reports for the police and relevant government agencies. The purpose of these intelligence reports was to highlight current firearm and ammunition trends and their distribution within the country. This study reviews all the trends that have been highlighted by NFFID between September 2003 and September 2008. A total of 8887 guns of all types have been submitted to the FSS over the last 5 years, where an average of 21% of annual submissions are converted weapons. The makes, models, and modes of conversion of these weapons are described in detail. The number of trends identified by NFFID shows that this has been a valuable tool in the analysis of firearms-related crime.

KEYWORDS: forensic science, conversion methods, firearms, intelligence, modifications, National Firearms Forensic Intelligence Database, trends

The National Firearms Forensic Intelligence Database (NFFID) was developed by the Forensic Science Service (FSS) as an investigative tool for collating and comparing information from items submitted to the FSS to provide intelligence reports for the police and relevant government agencies (Short J, Wickham G. National Firearms Forensic Intelligence Database, personal communication, 2005). The purpose of these intelligence reports was to highlight current firearm and ammunition trends and their distribution within the country. These trends included novel firearm and ammunition types, similar methods of modification with regard to blank and gas firing handguns and the increase in submissions of specific firearm and ammunition combinations. The distribution of these trends throughout England and Wales could then be further analyzed to provide invaluable information on supply networks and allow for more effective, cross-force investigative strategies to be built. The analysis of the trends of firearms used in crime has also led to more informed policy making, such as the prohibition of self-contained gas cartridge air weapons by the Anti-social Behaviour Act 2003. The database can also be interrogated on other occasions to answer specific questions raised by our customers. NFFID became fully functional in April 2003.

The process of capturing information onto NFFID started at the point of submission into the FSS. Whenever a gun is submitted to the laboratory, it is checked to ensure that it is not loaded. During the course of this initial examination, basic information was collated about the item, and a skeleton NFFID record was created.

¹Forensic Science Service, Firearms Department, 109 Lambeth Road, London, SE1 7LP, UK.

Received 15 Dec. 2008; and in revised form 1 Mar. 2009; accepted 15 Mar. 2009.

The record was then completed upon the full examination of the item following any DNA or fingerprint examinations that may have been required. The information recorded onto the database includes: the type, date, and location of the offense, the circumstances of recovery of the gun/ammunition, the type of gun/ammunition, the make, model, serial number, and caliber of the gun and, if relevant, the method of conversion of the gun/ammunition. However, there has been a recent change in procedure at the laboratory, and an initial skeleton record is no longer generated during the safety check, with information only being inputted onto the database following the final, in-depth examination of the item. This ensures that all of the information on the database is as accurate as possible.

The national collation of firearms-related intelligence has now been taken over by the newly established National Ballistics Intelligence Service (NaBIS). It is therefore an appropriate time to review all of the trends that have been highlighted by NFFID between September 2003 and September 2008.

Unlike most other countries in the world, one of the most common types of gun used in crime in the United Kingdom is the blank, and sometimes gas, cartridge firing handgun that has been converted to fire bulletted ammunition. The quality of these conversions varies widely, but in recent years we have seen an increase in the numbers of professionally converted weapons. These can be capable of firing conventional calibers of bulletted ammunition, such as .25 Automatic, 9 mm Short, and 9 mm Parabellum. The second most common type of conversion seen in the United Kingdom is the air-cartridge revolver that has been converted to fire conventional bulletted .38 Special caliber cartridges.

Projectiles discharged from the majority of these converted weapons have been found to be capable of causing lethal injuries.

As such they were generally found to be firearms as defined in section 57(1) of the Firearms Act 1968 and were considered to be prohibited weapons by virtue of either section 5(1)(aba) of that Act, as amended, because of their small size, or section 5(1)(a) if capable of firing more than one cartridge for each pull of the trigger.

These types of converted handgun, along with the converted air-cartridge revolvers submitted to the laboratory, are described later, in conjunction with their relevant NFFID statistics.

Materials and Methods

NFFID runs using the LabWare LIMS software for Microsoft Windows. It was built specifically for the Forensic Science Service in conjunction with the Association of Chief Police Officers (ACPO) and our other Home Office partners. The database was in development for approximately 18 months and went live on April 1, 2003.

Results

Overview of Firearm-Related Submissions to the Laboratory

A total of 8887 guns of all types have been submitted to the FSS over the last 5 years. The proportions of different weapon types have been relatively consistent, with only slight differences between each year (Fig. 1). The most common types of weapon submitted each year are air weapons, second most common are converted weapons accounting for an average of 21% of submissions per year, and the third most common are generally unconverted imitation firearms, followed by shotguns and then conventional handguns. Rifles and reactivated weapons account for an average of 2.5% and 1% of submissions each year, respectively, with conventional fully automatic weapons accounting for *c.* 1% of submissions each year.

However, when the breakdown of the different types of converted weapon is analyzed for each year (Fig. 2), the proportions vary greatly. A total of 1932 converted weapons have been submitted to the FSS over the last 5 years. The most common types of converted weapons and the changes in the numbers submitted between September 2003 and September 2008 are discussed later.

Converted BBM Police and BBM ME8 Police Blank Cartridge Firing Pistols

One of the first trends identified was the converted, Italian manufactured, BBM Police and BBM ME8 Police blank cartridge firing pistols, which are externally modeled on the Walther PPK self-loading pistol. A total of 257 have been examined since NFFID was introduced, but these types of converted blank firing pistols had been seen in relatively large numbers before NFFID was implemented.

These pistols (Fig. 3) are originally designed to fire 8 mm caliber blank cartridges only and are not capable of discharging projectiles because of the presence of an obstruction in their dummy barrel. The most common form of conversion has been where the obstructed portion of the dummy barrel has been removed from a point in front of the chamber, and a smooth-bore unobstructed tube has been inserted into the remaining portion of the dummy barrel. This creates an unobstructed, smooth-bore barrel. The replacement barrel has often been as crude as a section of copper tubing (Fig. 3). In this converted state, the pistols are now capable of discharging a projectile.

These types of converted blank cartridge firing pistol were generally submitted with modified 8 mm caliber blank cartridges. As manufactured, these types of blank cartridge are sealed with a plastic case mouth closure that is designed to rupture on firing but remain in place. However, these cartridges can be modified; the closure is partially removed and either an improvised projectile or an airgun pellet is inserted into the case mouth.

Converted Key-fob Blank and Gas Cartridge Firing Pistols

The first converted key-fob blank and gas cartridge firing pistol submitted to the laboratory was from an incident dated October 23, 2003 and since then a total of 31 have been entered onto NFFID. While they have not been seen at the laboratory in any great numbers when compared to the other types of converted blank cartridge firing weapon, their unusual construction and ease of concealment make them worthy of note (Fig. 4).

Key-fob guns do not resemble conventional firearms and instead are designed to resemble the key-fob devices used for remotely locking and unlocking cars. They consist of two detachable

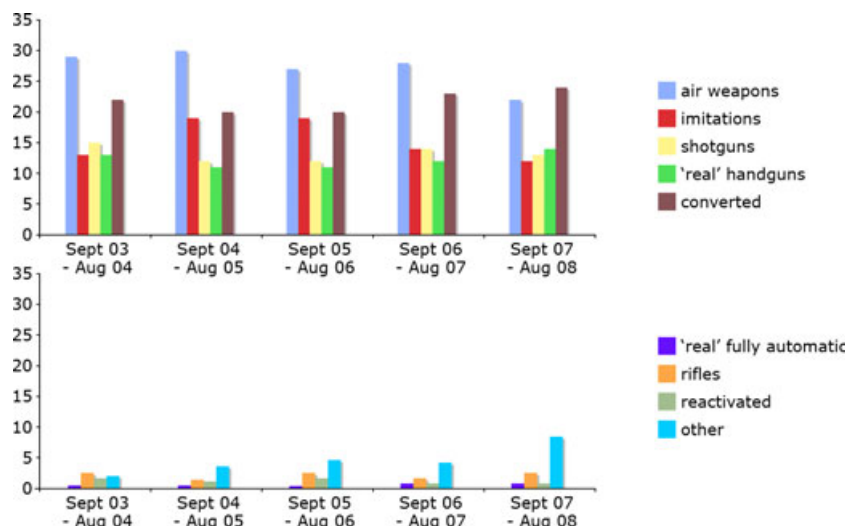


FIG. 1—Types of guns submitted to the Forensic Science Service between September 1, 2003 and August 31, 2008 as a percentage of the total number of guns submitted for each year.

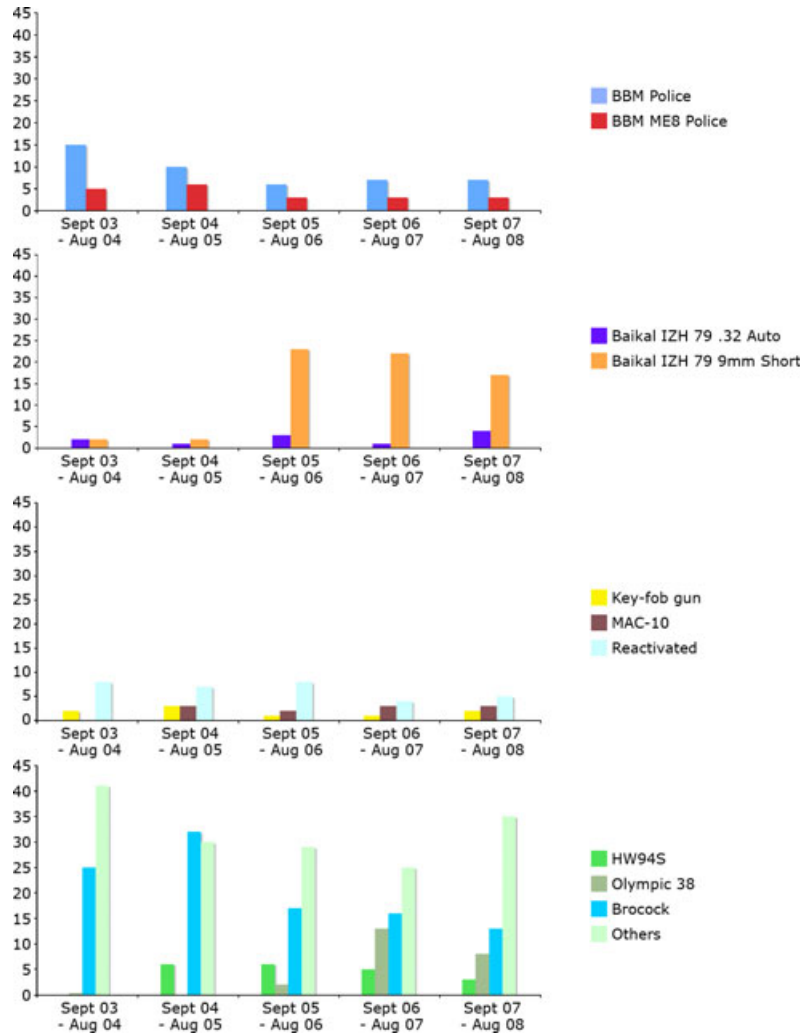


FIG. 2—Types of converted weapons submitted to the Forensic Science Service between September 1, 2003 and August 31, 2008 as a percentage of the total number of converted weapons submitted for each year.

sections. The front section incorporates two side-by-side barrels, and the rear section incorporates a trigger button, inline with each barrel, and the firing pin assembly for each barrel. These two sections are locked together via a sliding button on the front section. There is a key-ring at the rear of the device, which also doubles as the cocking mechanism of the gun. The gun is cocked by pulling back the key-ring, and it is then possible to fire the left- and right-hand barrels by pressing the left- and right-hand trigger buttons, respectively. Their overall length is approximately 10 cm.

These key-fob guns are manufactured by the Bulgarian company Bulforce-Milex with the model designation “OSA20” for self-defense purposes. They are designed as multi-purpose guns capable of firing both 8 mm caliber blank and gas cartridges. In addition, an adaptor can be screwed into the muzzles of the device for the discharge of pyrotechnic signal stars, which are commonly known as flares. A partial obstruction in the form of a pin would be present in each barrel and would prevent the discharge of projectiles, but allow the forward venting of lachrymatory substances such as 2-chlorobenzalmalononitrile, which is more commonly referred to as CS or “tear gas.” The conversion of these devices is relatively straightforward. The partial blockage is removed, and a steel lining is fitted to each chamber. In this converted state, it is possible to fire conventional .25 Automatic (6.35 mm Browning) caliber

cartridges in each barrel. The device does not eject the fired cartridge cases, but instead needs to be dismantled and the cartridge cases manually removed to reload.

As these key-fob guns are designed to fire gas cartridges they would be prohibited in the United Kingdom even in their unconverted state by virtue of section 5(1)(b) of the Firearms Act 1968.

Converted HW94S Blank Cartridge Firing Pistols

The first converted German manufactured Weihrauch HW94S blank cartridge firing pistol (Fig. 5) submitted to the laboratory was from an incident dated April 18, 2004 and since then a total of 80 have been entered onto NFFID with the majority from incidents dating between 2004 and 2007.

This type of blank cartridge firing pistol was designed for use with 9 mm Rimmed caliber blank cartridges only and would not have been capable of firing projectiles because of the presence of an obstruction in its dummy barrel. The conversion of these pistols was slightly more sophisticated than that of the BBM Police and ME8 Police in that the dummy barrel was completely removed and a replacement unobstructed smooth-bore barrel, including chamber, was attached. In this converted state, the HW94S was now capable of firing either modified 9 mmPA caliber blank cartridges, that had



FIG. 3—Converted BBM Police blank cartridge firing pistol (top row). Bottom photograph showing the replacement barrel, which in this example is a piece of copper tubing.

been shortened in length and had an improvised lead projectile inserted into the case mouth, or conventional 9 mm Short caliber cartridges.

Several other modifications were also carried out to the HW94S to allow the loading or discharge of the shortened 9 mmPA or 9 mm Short caliber cartridges. The ejector was shortened, and these pistols were usually seen with a modified, nonoriginal, cartridge magazine as the original magazine was not compatible with the cartridges, and the converted pistol was now designed to fire. Two alternative types of magazine were seen submitted with these converted pistols. Either a modified magazine from another make and model of blank firing pistol, such as the BBM Bruni Mod. 92, or an entirely homemade magazine was used. The original retention notch of the BBM Bruni Mod. 92 magazine was filled in and a new one was cut below. As a result, the modified magazine would remain in position when inserted into the converted HW94S pistol.

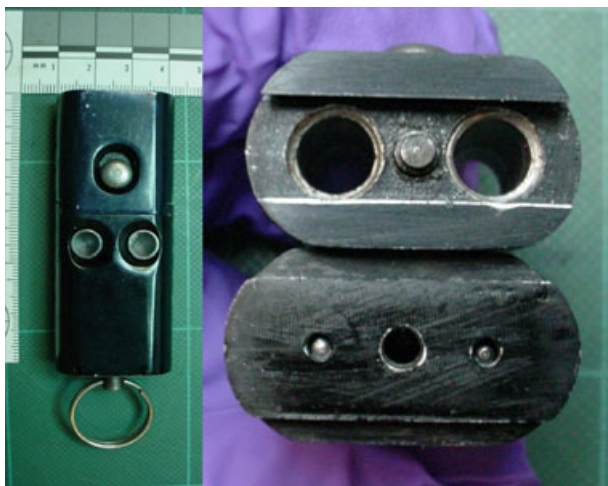


FIG. 4—Converted key-fob gun.

In addition, a pin was often seen across the base of the magazine well.

If modified BBM Bruni Mod. 92 magazines, or similar, were submitted in conjunction with 9 mm Short caliber cartridges, the bullet of each cartridge was usually pushed slightly into its case mouth, as full length 9 mm Short caliber cartridges were too long to fit into this type of magazine. On occasion, a hybrid cartridge was submitted, which is a type of converted cartridge, consisting of an extensively shortened 9 mm Parabellum caliber cartridge case fitted with a standard 9 mm Short caliber bullet; however, the overall length of this cartridge was much shorter than a 9 mm Short caliber cartridge.

The numbers of converted HW94S blank firing pistols submitted increased steadily until 2007, after which the numbers started to decline. They are still seen occasionally at the laboratory; however, far more numbers of the more sophisticated converted Baikal IZH-79 blank and gas cartridge firing pistol are being submitted for examination.

Converted Baikal IZH 79 Blank and Gas Cartridge Firing Pistols

In recent years, the converted Baikal IZH 79 blank and gas cartridge firing pistol is not only the most common converted handgun submitted to the FSS, it is also the most sophisticated. The first example captured by NFFID had been submitted to the laboratory from an incident dated March 16, 2003, although several others had been submitted prior to the implementation of this database with the first being in 2002. However, the majority of the converted Baikal IZH 79 pistols submitted to the FSS were from incidents dated between 2005 and 2007. To date, a total of 303 of these converted pistols have been entered onto NFFID.

These pistols are originally manufactured by the Russian company Baikal. The full model designation is IZH-79-8, although the letters IZH, IJ, and ИЖ are used interchangeably by Baikal across their model designations. The “IZH” of the model designation is



FIG. 5—Converted HW94S blank cartridge firing pistol (top row). Bottom left—showing a compatible modified magazine on the left and the unmodified BBM Bruni 92 magazine on the right. Bottom right—showing the replacement barrel.

derived from the first letters of the town Izhevsk where the Baikal factory is located. This pistol is based on the Soviet military-issue “Makarov” self-loading pistol and is designed as a multi-purpose pistol capable of firing both blank and irritant, or “tear gas,” 8 mm caliber cartridges (Fig. 6). As for the key-fob guns described earlier, a partial barrel obstruction would be present to prevent the discharge of projectiles, but allow the forward venting of a lachrymator.

The conversion process used on these pistols is by far the most sophisticated seen at the laboratory. The entire blocked barrel is removed and replaced with an unobstructed, rifled barrel. Rifling is a process where helical grooves are introduced into the bore of the barrel. Its purpose is to aid stability and accuracy of the bullet once it has exited the muzzle. No other types of converted weapon submitted to the laboratory have been seen with such well-defined rifling. Two variants have been seen that are chambered to fire either .32 Automatic (7.65 mm Browning) or 9 mm Short (.380 Automatic) caliber cartridges. The muzzle of the replacement barrel is usually threaded to accept a sound moderator, or “silencer.” In addition, the breech face of these pistols is enlarged, and the ejector is shortened to accommodate slightly wider cartridges than those the pistols were originally designed to fire. The serial number, caliber, and model designation are often erased from these pistols: usually neatly by milling, but occasionally less sophisticatedly by filing or grinding.

The .32 Automatic caliber versions were the first to be seen at the laboratory; however, the number of these submitted has now been overtaken by the 9 mm Short caliber variants (Fig. 2). Several rifling styles have been seen; the most common being a barrel with four grooves with a right-hand twist (4R); however, versions with three grooves with a left-hand twist (3L), six grooves with a left-hand twist (6L), and six grooves with a right-hand twist (6R) have also been observed.

The ammunition submitted with the 9 mm Short caliber variants has predominantly been stamped with the markings of either the Czech Republic company Sellier & Bellot (S&B), the South African company Pretoria Metal Pressings (PMP), the American-owned

company Wolf, or more recently the Brazilian company Companhia Brasileira de Cartuchos.

Intelligence surrounding the seizures of these weapons has established that they are being converted outside of the United Kingdom, most likely in Eastern Europe, and then smuggled into the country in their converted state. It has also been found that often a pistol is smuggled and sold as part of a package comprising the gun, a sound moderator, and a quantity of ammunition. At least one factory converting these pistols was discovered in Lithuania and closed down. As this will have reduced the numbers of these converted pistols being produced and brought into the country, it could explain the decrease in the numbers now being submitted to the laboratory.

The converted Baikal pistol has also been used in many wounding shooting incidents and murders in the United Kingdom.

As for the key-fob guns described earlier, Baikal IZH 79 pistols are designed to fire gas cartridges and would therefore be prohibited in the United Kingdom even in their unconverted state by virtue of section 5(1)(b) of the Firearms Act 1968.

Converted “MAC-10” Type Blank Cartridge Firing Sub-machine Guns

This blank cartridge firing weapon is based on the American manufactured Ingram Military Armaments Corporation Model 10 sub-machine gun, more commonly referred to as the “MAC-10.” Over the years, many companies around the world have manufactured copies of this sub-machine gun, with only minor differences in their external appearance, such as the style of the selector switch, type of grip, and the manufacturer’s markings. The original MAC-10 is often fitted with a threaded muzzle to accept a sound moderator, or “silencer.” Blank cartridge firing copies of the MAC-10 sub-machine gun had been available for purchase in the United Kingdom, either in shops or on the internet, since at least 2002. There are no markings on the majority of the blank cartridge firing versions to indicate who actually manufactures these weapons. The first converted version of this blank cartridge firing



FIG. 6—Converted Baikal IZH-79 pistol (top row). Middle left—replacement barrel with threaded muzzle. Middle right—pistol fitted with sound moderator.

sub-machine gun was submitted to the laboratory from an incident dated April 25, 2005 and since then a total of 41 have been examined. Since August 31, 2008 one other converted MAC-10 blank cartridge firing sub-machine gun has been examined, bringing the total examined to 42.

The blank cartridge firing version of the MAC-10 sub-machine gun is incapable of discharging projectiles because of the presence of an obstruction in its dummy barrel. However, these weapons are seen at the laboratory fitted with a replacement, smooth-bore unobstructed barrel chambered for conventional bullet 9 mm Parabellum caliber cartridges (Fig. 7). The converted blank cartridge firing version is externally a relatively accurate copy of the original. The only significant differences are that the blank cartridge firing copy does not have a threaded barrel for a sound moderator and that there are two small Allen screws to the rear of the barrel on the converted version to aid dismantling. However, there are more significant differences when dismantled versions are compared. The barrel is attached to the upper receiver of the original version, but to the lower frame of the blank cartridge firing copy. There is a large plate on the underside of the upper receiver of the converted version, which is part of the ejector. This plate is also present on the unconverted blank cartridge firing version; however, the ejector itself is shorter. Also, the ejector cut-out of the blank cartridge firing version is a very characteristic lozenge shape and size, rather than the curved semi-circular shape of the original. The extractor cut-outs are also slightly different shapes. When a fired cartridge case marked with this characteristic lozenge shaped ejector cut-out is submitted from a crime scene, it is immediately obvious to the firearms examiner that a converted blank cartridge firing MAC-10 sub-machine gun has been used to fire it. This is further confirmed if 9 mm Parabellum caliber bullets are also submitted that have been fired from a smooth-bore barrel.

While far fewer numbers of the converted MAC-10 sub-machine gun have been submitted to the laboratory when compared to the converted Baikal IZH-79 pistol, what sets them apart from the other conversions is their ability to fire in a fully automatic mode.

That is, to say that cartridges are fired continuously for each pull of the trigger until either the trigger is released or the magazine empties. Unlike their original counterparts, the converted blank cartridge firing version is only capable of fully automatic fire, and the selector switch on the upper receiver is a “dummy.”

The converted MAC-10 blank cartridge firing sub-machine gun has also been used in many wounding shooting incidents and murders in the United Kingdom. Recently, this converted blank firing sub-machine gun hit the headlines when a conversion factory was identified and shut down near Reading, Berkshire. It has been reported that 90 unconverted blank cartridge firing MAC-10 sub-machine guns had been purchased for conversion and approximately 36 have not been recovered and are still “at large.” Certainly since the closure of this conversion factory, the numbers of converted MAC-10 sub-machine gun submitted to the FSS have declined.

Converted Olympic 38 Blank Cartridge Firing Revolvers

The most recent trend in converted blank cartridge firing weapons submitted to the laboratory is the Italian manufactured BBM Olympic 38 blank cartridge firing revolver (Fig. 8). When compared to the converted Baikal IZH 79 and the MAC 10 variants, the converted BBM Olympic 38 appears to be less sophisticated in its modus operandi of conversion. The conversion is a relatively crude one, after which the revolver is generally submitted with modified blank cartridges only, and not conventional calibers of ammunition. The first example captured by NFFID had been submitted to the laboratory from an incident dated August 21, 2004 and since then a total of 84 have been entered onto the database.

The BBM Olympic 38 is a blank cartridge firing revolver designed to fire 9 mm Rimmed (.380 Blank) caliber blank cartridges and is incapable of discharging a projectile because of the presence of an obstruction in its dummy barrel and partially obstructed chambers. The barrel obstruction and the partial chamber obstructions are removed by a process such as drilling. The front of the chamber walls is also often seen built up to become flush

with the front of the cylinder. The revolvers are then capable of firing modified 9 mm Rimmed caliber blank cartridges that have been fitted with a projectile. Originally, these cartridges are

manufactured with a crimped case mouth. However, it is possible to open this crimped closure and insert an improvised projectile into the case mouth.



FIG. 7—Converted MAC-10 blank cartridge firing sub-machine gun (top row). Second row—original MAC-10 sub-machine gun. Third row left—barrel attached to upper receiver on original (top) and barrel attached to the lower receiver in blank firing version (bottom). Third row right—threaded muzzle on original (top), not present on blank firing copy (bottom). Fourth row left—breech face of blank firing version showing “lozenge” shaped ejector cut-out, marked with white arrow. Fourth row right—breech face of original, showing semi-circular shaped ejector cut-out. Bottom row left—ejector holding plate on underside of bolt on the blank firing version (bottom). Bottom row right—barrel covering the internal trigger mechanism on the blank firing version (bottom).

Converted Self-contained Gas Cartridge Firing Revolvers

The most common types of converted weapons that were not originally a blank or gas cartridge firing weapon are the self-contained gas cartridge firing revolver and pistol (Skae AJ, personal communication, May 2004). They are manufactured by various German companies such as Weihrauch, Cuno Melcher, and ME Sportwaffen and were imported to and distributed in the United Kingdom by the British company Brocock Ltd. These air weapons are therefore often referred to as “Brococks.”

These types of converted weapon were seen in great numbers before NFFID was introduced, and these volumes prompted changes in the legislation. The Anti-social Behaviour Act 2003, which came into effect on April 1, 2004, banned these self-contained gas cartridge weapons in their unconverted state, prohibiting them under section 5(1)(af) of the Firearms Act 1968, as amended. Converted Brocock weapons, particularly the revolvers, have been used in many wounding shooting incidents and murders in the United Kingdom. Since NFFID has been introduced, 403 converted Brococks have been entered onto the database.

Following the implementation of this change in legislation, the numbers of converted Brococks submitted to the laboratory greatly reduced; however, in the past 18 months this reduction appears to have slowed.

Brocock revolvers, and also the Brocock ME9 Mod Para pistol, are designed to fire either .177 inch (4.5 mm) or .22 inch (5.5 mm) caliber airgun pellets using self-contained gas cartridges, also referred to as Tandem Air Cartridges, or TACs. The body of the TAC is charged with compressed air and a collar, containing the airgun pellet, is screwed onto the top of the body. The cartridges are then loaded into the revolver or pistol and fired in the conventional manner for these weapon types. The weapons are fitted with a flat-faced firing pin which, upon firing, strikes a valve on the base of the TAC body. The compressed air is then released from the TAC, and the airgun pellet is propelled along the rifled barrel.

Several styles of conversion have been seen over the years and are outlined below, although overall the converted Brocock revolver has been more common than the converted pistol variant:

- One of the earliest conversion methods seen at the laboratory concerned a revolver that had sleeves inserted into its chambers so that conventional .22 Hornet caliber cartridges could be fired. The .22 Hornet cartridge was sometimes too long to fit into the revolver's chambers and therefore often the bullet was removed and replaced nose first into the cartridge case.
- A small number of one variant have been examined where the rifling had been removed from a Brocock revolver, and the chambers had been sleeved for .25 Automatic caliber cartridges (1).
- Occasionally, nothing was performed to the revolver at all and only the TACs were modified. The internal valve mechanism and the base of the TAC were removed, and a blank cartridge was inserted into the TAC body. The airgun pellet was then propelled using discharge gases rather than compressed air and therefore travelled with a much greater velocity and kinetic energy, which in turn led to a much greater wounding potential. Characteristic “haloing” was present on the front of the cylinder around the chambers and also firearms discharge residues were present in the barrels of these weapons, indicating that nonstandard TACs had been fired. Occasionally, the firing pin was sharpened on these variants, although this was not necessary to successfully fire the blank cartridges.
- The most common Brocock revolver conversion method was to drill out the rifled barrel sleeve, leaving a smooth-bored barrel measuring approximately 9 mm in diameter, remove the shoulders in the chambers, and fill in the chamber walls. In this converted state, the revolvers were capable of firing conventional bulletted .38 Special caliber cartridges (Fig. 9). Nominal .38 inch bullets, recovered from shooting scenes or injured parties, that have been marked by a smooth-bore barrel indicate that a converted Brocock revolver has most likely been used to fire them.
- Sometimes nothing was performed to the ME9 Mod. Para pistol, and occasionally only the firing pin was sharpened. The



FIG. 8—Converted BBM Olympic 38 blank cartridge firing revolver (top row). Bottom left—partial chamber obstructions are removed. Bottom right—barrel obstruction is removed.

pistol was capable of firing modified 9 mmPA caliber blank cartridges that had been fitted with an airgun pellet. Again, examination for firearms discharge residues would indicate that propellant-based cartridges had been fired.

- Occasionally, the rifled barrel had either been removed from the ME9 Mod. Para pistol and a replacement smooth-bore barrel attached, or, more commonly, the rifled barrel sleeve was drilled out to leave an enlarged bore. These pistols were then capable of firing either a modified 9 mmPA caliber blank cartridge that had been shortened and had an improvised lead projectile inserted or, on occasion, conventional bulletted 9 mm Short caliber cartridges.

Reactivated Handguns

Reactivated weapons are the third type of converted gun examined at the laboratory (2–4). Since NFFID was introduced, 126 reactivated weapons have been entered onto the database. The numbers of reactivated weapons submitted each year is largely consistent, averaging at *c.* 1%.

In relation to the Firearms (Amendment) Act 1988, in 1989 the Home Office published specifications for the deactivation of firearms, which would render their essential components unsuitable for use and make them incapable of discharging a projectile (5). There were both specific and general procedures outlined. The specific procedures were for individual weapon types, including bolt action rifles, shotguns, self-loading pistols, sub-machine guns, and assault rifles. The general specifications were for all types of firearm and included procedures such as slotting the barrel, either over-boring the barrel or driving a tight steel rod into the bore, removing a substantial part of the bolt or breech face, removing or shortening the firing pin and cutting away the slide rails. All weapons that have been deactivated to the Home Office specifications must be inspected by a United Kingdom Proof House, stamped accordingly and be issued with a certificate of deactivation.

Firearms have been submitted to the FSS that had originally been deactivated to the 1989 specifications, but that had subsequently been reactivated and rendered capable of discharging

projectiles again. The deactivation specifications were revised in 1995 and made more stringent (6). Various additional processes were outlined in these revised specifications, especially in relation to prohibited weapons, such as self-loading pistols and sub-machine guns. Also “essential components” were defined as including all major pressure bearing components such as the barrel, bolt, action, breech-locking systems, and any systems, which delay the opening of the breech during the firing process. In addition to the overall 1995 general deactivation specifications, those for prohibited weapons now include that, where relevant, the bolt or bolt carrier assembly must be removed and destroyed and that all internal hammers, sears, pins, and selector switches must be welded together.

The 1995 specifications replaced the 1989 ones; however, they were not retrospective. Therefore, there are still many pre-1995 deactivated guns in circulation. Very few examples of post-1995 deactivated guns have been submitted to the laboratory in a reactivated condition.

The reactivations process can involve simply reversing the deactivation procedures that have been carried out, such as rebuilding the breech face, replacing the firing pin, filling in the barrel and chamber slot, and removing the barrel obstruction. However, the most common example of reactivation that has been submitted to the laboratory is the Tokarev self-loading pistol; where a new breech piece has been inserted, a replacement firing pin fitted, and the deactivated barrel has been replaced with a commercially available rifled 9 mm Parabellum caliber barrel. In recent months, several reactivated Colt 1911 self-loading pistols have been submitted to the laboratory.

Discussion

It is during the times of sudden increase in submissions, such as between September 2005 and August 2007 for the converted Baikal IZH-79 pistols and between September 2006 and August 2007 for the converted BBM Olympic 38 revolvers (Fig. 2) that the specific information on the emerging trend was fed back to the police intelligence departments. In addition to specific details about the



FIG. 9—Most common version of the converted self-contained gas cartridge revolver, aka “Brocock” (top row). Bottom left—chamber restrictions are removed. Bottom right—original rifled barrel sleeve removed. In this condition, the revolver is capable of firing conventional .38 Special caliber cartridges.

submitted items, the information collated by NFFID includes the location, date, and police crime reference of the incident. This information was interrogated by police intelligence departments to assess factors such as the supply network of these converted weapons or the individuals associated with their movement and supply. As has been seen with the converted Baikal IZH-79 pistols, a targeted approach between various departments including the Metropolitan Police, the Serious and Organised Crime Agency (SOCA), and the Lithuanian Police led to the disruption and breakdown of one of the major supply networks of these converted pistols into the United Kingdom. This appears to have had an effect on the numbers of converted Baikal IZH-79 pistols being transported into the United Kingdom as NFFID has shown that the numbers being submitted to the FSS is decreasing (Fig. 2). Therefore, in this example NFFID has been vital not only in the initial provision of intelligence to highlight a problem weapon type but also subsequently in the provision of intelligence, which could be used to monitor the effects of policing methods used to tackle ongoing gun crime.

Furthermore, intelligence highlighting a decrease in submissions of items, such as converted Brococks over the last 3 years, can be relayed so that policy makers can try and determine whether or not legislative changes, such as the Anti-social Behaviour Act 2003, have had the desired effect (Walters AE, personal communication, June 2006).

These types of converted weapon are routinely used in various offenses in England and Wales such as possession, possession with intent to endanger life, Grievous Bodily Harm (GBH), wounding, attempted murder, and murder. Every time one of these weapons is submitted to the laboratory, it is test fired and the resultant control fired cartridge cases and bullets are screened against the Open Case File (OCF), now based at NaBIS. The OCF is a collection of predominantly fired cartridge cases and bullets recovered from shooting incidents. Historically, large numbers of connections between the OCF and submitted converted weapons have been identified each year. This has yielded significant intelligence for the police who are then able to look through other intelligence surrounding the incidents, which will include the results of other forensic evidence examinations such as DNA or fingerprints, to assess whether

the same, or different, individuals may have been involved in the various offenses. For example, one converted Baikal IZH-79 pistol recovered in May 2008 had been found to be used in a murder in November 2005 and a possession with intent to endanger life offense in January 2007. In a separate series of connections, another converted Baikal IZH-79 pistol had been used in a GBH offense in January 2007, a possession with intent to endanger life offense in August 2007, and a murder in October 2007. A converted MAC-10 blank cartridge firing sub-machine gun recovered in November 2006 that had been identified as having been converted in the factory located in Reading, Berkshire had been used in a murder in October 2006 and a further murder in November that same year, in addition to four other shooting incidents between July and October 2006. A final example concerns a converted Brocock revolver; a gun recovered in April 2008 was found to have been used in a murder in November 2007.

Overall, the number of trends identified by NFFID show that this has been a valuable tool in the analysis of firearms-related crime.

References

1. Thomson GS. Brocock ME38 magnum airweapon. A conversion worthy of note. *AFTE Journal* 2001;33(1):53–5.
2. Warlow TA. The criminal use of improvised and re-activated firearms in Great Britain and Northern Ireland. *Sci Justice* 2007;47:111–9.
3. Migeot G, De Kinder J. Reactivating deactivated firearms. *Forensic Sci Int* 1999;10:173–9.
4. Warlow TA. The criminal reactivation of firearms—the British experience. *AFTE Journal* 2004;36(3):8–15.
5. Firearms Law. Specifications for the adaptation of shot gun magazines and the de-activation of firearms. London, England: HMSO Publications Centre, 1989.
6. Firearms Law. Specifications for the adaptation of shot gun magazines and the de-activation of firearms. Revised 1995. London, England: HMSO Publications Centre, 1995.

Additional information and reprint requests:
 Abigail G. Hannam, M.Sc.
 Forensic Science Service—Firearms Department
 109 Lambeth Road
 London SE1 7LP
 UK
 E-mail: Abigail.Hannam@fss.pnn.police.uk