Forensic Fireams Overview

A Brief Overview by Mark Mastaglio BSc (Hons) FFSSoc and Angela Shaw BSc (Hons) MFSSoc

Never has the provision of forensic science to the Criminal Justice System been so fragmented and subject to so much police control. The Government has openly embraced a laissez-faire, market-led approach whereby the prosecution either buys its forensic science from commercial providers or relies upon police-carried out tests and interpretation.

This has had a profound effect on the way gun crime related prosecution evidence is generated. Cuts to police budgets have led the police to think that they can extend their investigative remit and become generators and evaluators of forensic evidence. Virtually all police forces in England and Wales now rely on in-house classification of firearms and outsource the analysis and interpretation of gunshot residue (GSR). Only when they lack the expertise do they spend money on a commercial forensic science provider.

This approach has also led to the forensic science process being split into commodities; police officers tend to think of forensic science as a set of tests. However the real skill of the forensic scientist is in putting the results of these tests in context and explaining what they mean. Additionally when it comes to the interpretation of firearms legislation, which is by no mean straightforward, the police do not always understand the full implications of statute and case law.

With evidence types such as fibres, DNA, paint, glass and GSR the police now send a multitude of sub-samples to different commercial forensic labs, the result being that no one provider sees the whole picture. Increasingly it comes down to the police controlling the evaluative phase. Inevitably one of the consequences of a police controlled evaluative system is possible institutional prosecution bias.

Following the Government's closure of the Forensic Science Service (FSS) the growth of police in-house sourcing of forensic science has mushroomed. When the FSS closed in April 2012, the two most senior FSS gun crime scientists setup the Forensic Firearms Consultancy (FFC) Ltd **www.forensicfirearmsconsultancy.com**. These scientists have over 35 years experience. FFC works primarily, but not exclusively, for the defence and has prepared numerous reports that have highlighted the shortcomings of how the police generate and interpret their gun crime forensic science. One such report highlighted the lack of robust interpretation of GSR results where the police scientists had not evaluated the possible contamination issues in the context of the case. The FFC input contributed to the acquittal of the defendant who was on trial for Murder.

What FFC scientists have discovered is that most police forces are using their own armourers to classify firearms in facilities that are not accredited and which use

equipment not traceable to any national standard. The situation has arisen where the police are allowed to use facilities and practices that would not be allowed for any commercial forensic science provider. It has also been noted that the use of police armourers who are not trained in trace evidence recovery could impair the effectiveness of a cogent forensic strategy being developed with the loss or compromising of valuable trace evidence such as DNA, fibres or GSR. All these evidence types could be instrumental in the acquittal or conviction of a suspect.

FFC scientists have also co-founded Principal Forensic Services (PFS) Ltd. www.principalforensicservices.com with the goal of providing a one-stop-shop for clients who may require experts from all the forensic science disciplines. PFS is the most concentrated repository of world-renowned experts in the UK and represents a bulwark against falling prosecution standards and potential police bias.

Firearms crime is a serious issue for society and convictions carry heavy sentences. The unlawful possession of a prohibited weapon as defined by section 5(1)(aba) of the amended Firearms Act 1968 is an offence of strict liability and carries a mandatory, minimum sentence of 5 years imprisonment. However an in-depth knowledge of both the legislation and the forensic science issues can lead to defence propositions being successful. For example, the court may accept that the gun was an antique as defined by section 58 of the 1968 Act or was of historical or techncal interest. The identification of component parts, which in them selves can be classified as firearms can be of vital importance. Does the possession for example, of a bolt from an M16 or a pump action shotgun, mean an automatic minimum 5 year sentence? No it doesn't! A firearms forensic scientist who knows the law inside out can readily identify this.

A recent change in the legislation has banned realistic imitations from being imported or sold in the UK. A significant proportion of the guns used in crime have been converted from blank firing guns, however in order to be able to classify such a gun as a firearm one must be confident it is capable of causing more than trivial injury from which death would result. This needs a thorough knowledge of wound ballistics and the ability to interpret test firings. Some of the cases investigated by FFC scientists show that the police have not looked into this basic need before classifying weapons.

Air guns regularly feature in cases where we have been instructed. The prosecution work has usually been carried out by the police using procedures and equipment which has not been accredited and calibrated to acceptable standards. Such evidence does not stand up to close scrutiny.

Firearms forensic science is a dynamic discipline with the types of firearms, the legislation and case law frequently being updated. The latter being illustrated by the Appeal Court ruling in the case of of R v Bewley [2012] EWCA Crim 1457 where the definition of what actually constitutes a firearm was clarified.

The interpretation of GSR is a highly complex and technical field where the strength of the evidence must be assessed in the context of the individual case. That the particles originate from a firearm is rarely contested. However, this carries the expectation that potential GSR particles will initially have been correctly identified and classified by the commercial forensic laboratory utilised by the police. But in some of the cases investigated by FFC scientists this has been shown to be an incorrect expectation with GSR either being misclassified or missed. Of great interest to the court is how the particles came to be deposited on the suspect's clothing or hands and all aspects of the case must be considered when interpreting the findings. This must always include an assessment of the possibility of contamination at all stages of the forensic process. These issues are complex and FFC scientists are very experienced in this field; a field which is one of the most heavily scrutinised in criminal investigations.

We have nearly four decades trying to raise scientific standards with regards to firearms related forensic science it is now unfortunate to see the fragmentation and commensurate loss of the UK's forensic science knowledge base. With the creation of FFC we will strive to serve the needs of all who require impartial firearms forensic science advice.

FORENSIC FIREARMS CONSULTANCY